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DEFINITIONS

COMPANY

Refers to Lakehead Pipe Line Company, Limited Partnership, Lakehead Pipe Line Company, Inc., Interprovincial Pipe Line Inc., Enbridge Pipelines Inc. or their successors.

ENBRIDGE PIPELINES INC.

A Canadian interprovincial company which primarily owns and operates a liquid hydrocarbon pipeline system in Canada which interconnects with Lakehead's pipeline system. Enbridge is affiliated with Lakehead.

TERRACE EXPANSION PROJECT - PHASE III

The name given to the latest Lakehead Pipe Line Expansion Program. This proposed project consists of the construction of new 36-inch pipe segments to connect existing 48-inch segments between Clearbrook, Minnesota and Superior, Wisconsin. As part of this project, new pumping units are planned to be added to the existing Clearbrook and Deer River pumping stations. In-service date of this project is June 2003.

CRUDE OIL AND CRUDE PETROLEUM

Terms used interchangeably to describe the liquid hydrocarbons transported in the pipeline system.

HEAVY CRUDE

A commodity having a density from 904 kg/m³ to 927 kg/m³ inclusive and a viscosity from 100 to 250 mm²/s. As defined in the Lakehead Pipe Line Company, Limited Partnership local tariff applying on crude petroleum and natural gas liquid.

MEDIUM CRUDE

A commodity having a density from 876 kg/m³ up to but not including 904 kg/m³ and a viscosity from 20 mm²/s up to but not including 100 mm²/s. As defined in the Lakehead Pipe Line Company, Limited Partnership local tariff applying on crude petroleum and natural gas liquid.

LIGHT CRUDE

A commodity having a density from 600 kg/m³ up to but not including 876 kg/m³ and a viscosity from 0.4 mm²/s up to but not including 20 mm²/s. As defined in the Lakehead Pipe Line Company, Limited Partnership local tariff applying on crude petroleum and natural gas liquid.

NGL (Natural Gas Liquids)

A commodity having a maximum absolute vapor pressure of 1 100 kilopascals at 37.8°C and a density of up to but not including 600 kilograms per cubic meter (kg/m^3) and a viscosity of up to but not including 0.4 square millimeters per second (mm^2/s). As defined in the Lakehead Pipe Line Company, Limited Partnership local tariff applying on crude petroleum and natural gas liquid.

“LOOP” or “PIPELINE SEGMENT”

Terms used interchangeably to describe the pipe sections which exist in the pipeline system or the proposed pipe sections to be constructed. The terms are used to distinguish a portion of the pipeline from an entire pipeline.

4415.0115 **GENERAL INFORMATION**

Subpart 4. Background Information

Each application must contain the following information:

A. the applicant's complete name, address and telephone number:

The applicant is:

Lakehead Pipe Line Company, Limited Partnership
21 West Superior Street
Duluth, Minnesota 55802-2067
Telephone: (218) 725-0100

B. the complete name, title, address, and telephone number of the official or agent to be contacted concerning the applicant's filing:

Please contact the following concerning the application:

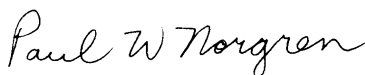
Paul W. Norgren, Supervisor, Right-of-Way & Project Specialist
Lakehead Pipe Line Company, Inc.
as General Partner on behalf of
Lakehead Pipe Line Company, Limited Partnership
21 West Superior Street
Duluth, Minnesota 55802-2067
Telephone: (218) 725-0150

C. the signatures and titles of persons authorized to sign the application are:

This application is submitted on behalf of Lakehead Pipe Line Company, Limited Partnership, by Lakehead Pipe Line Company, Inc. as General Partner, by



Larry H. DeBriyn, Vice President



Paul W. Norgren, Supervisor,
Right-of-Way & Project Specialist

D. a brief description of the proposed project:

- (1) general location;**
- (2) planned use and purpose;**
- (3) estimated cost;**
- (4) planned in-service date; and**
- (5) general design and operational specifications for the type of pipeline for which an application is submitted.**

The Minnesota portion of the proposed pipeline project consists of five separate segments of approximately 97 miles of 36-inch outside diameter pipe. The pipeline will be buried underground, primarily within and adjacent to Lakehead's existing right-of-way and parallel to existing pipelines on Lakehead's multiple line rights easements in the counties of Clearwater, Beltrami, Cass, Itasca, St. Louis and Carlton. Easements on a few parcels will need to be widened or diverted less than 1100 feet from the original easement due to encroachments. The pipeline segments will be installed starting near Lakehead's terminal near Clearbrook, Minnesota and ending at Lakehead's terminal near Superior, Wisconsin. This new construction appears in Map A in relation to the Lakehead system and on Maps D through I on a county by county basis.

This expansion is referred to within the Company as the "Terrace Expansion Project Phase III" which complements similar expansions of the Enbridge Pipelines Inc. System, Lakehead's Canadian affiliate.

Two new pump stations are proposed for construction at Lakehead's existing Clearbrook and Deer River, Minnesota sites. All new facilities will become a part of the existing pipeline facility and will be used to transport crude petroleum to Minnesota Pipe Line at Clearbrook, Minnesota and other existing delivery points east of Clearbrook, Minnesota. A net capacity increase to the pipeline system of approximately 147,800 barrels per day is expected on an annual average. The pipeline system capacity before and after the proposed expansion is shown in more detail in Table 4415.0120-A.

The system's operating configuration is also simplified with expansion, as crossover piping between varying pipe diameters is not required. The proposed piping configuration is shown in Map J and the existing configuration in Map K.

The estimated cost of the Minnesota portion of the proposed new 36-inch outside diameter pipeline segments and two pump stations is approximately \$126 million. Generally, Lakehead plans to commence construction in spring 2002 with most work finishing in fall 2002. The remaining work will finish early in 2003 in order to have the pipeline in service by June 2003.

4415.0120 DESCRIPTION OF PROPOSED PIPELINE AND ASSOCIATED FACILITIES

Subpart 1. Pipeline Design Specifications.

The specifications for pipeline design and construction are assumed to be in compliance with all applicable state and federal rules or regulations unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the anticipated pipeline design specifications must include but are not limited to:

- A. pipe size (outside diameter) in inches;**
- B. pipe type;**
- C. nominal wall thickness in inches;**
- D. pipe design factor;**
- E. longitudinal or seam joint factor;**
- F. class location and requirements, where applicable;**
- G. specified minimum yield strength in pounds per square inch; and**
- H. tensile strength in pounds per square inch.**

The United States Department of Transportation Safety Regulations, Title 49, Code of Federal Regulations (CFR), Part 195 - "Transportation of Hazardous Liquids by Pipeline," prescribes minimum federal safety standards for pipeline facilities used in the transportation of crude oil and natural gas liquids. The design specifications for the proposed Company facility include the following:

Pipe size (outside diameter): 36-inches

Pipe type: API Specification 5L X-70 Double
Submerged-arc Welded (DSAW)

API refers to the American Petroleum Institute. API 5L identifies the published specification for high-test steel line pipe. This specification addresses various grades of welded steel line pipe and includes sections on process of manufacture, chemical/physical requirements, and methods of testing and dimensional tolerance.

Grade X-70 identifies pipe manufactured in accordance with API 5L having a specified minimum yield strength (SMYS) of 70,000 pounds per square inch.

The DSAW pipe utilized in this project is pipe which has a single longitudinal seam joined by a submerged-arc welding process.

Nominal wall thickness: 0.354 inches

Pipe design factor: 0.72 in accordance with
49 CFR 195.106.

Longitudinal or seam joint factor: 1.00 in
accordance with 49 CFR 195.106.

Class location: not applicable for pipelines regulated
under 49 CFR Part 195.

Specified minimum yield strength (SMYS): 70,000 pounds per square
inch (psi).

Tensile strength: 82,000 pounds per square inch
minimum in accordance with API 5L. The ratio of yield strength
to tensile strength shall not exceed 0.82.

Pipe Coating: Mill applied fusion bond epoxy coating,
nominally 16 mils thick.

Subpart 2. Operating Pressure.

Operating pressure must include:

- A. operating pressure (psi)**
- B. maximum allowable operating pressure (psi).**

The operating pressure of the proposed pipeline will be approximately
950 psi. The maximum allowable operating pressure (MAOP) has been
determined in accordance with the following formula (49 CFR 195.106):

$$P=(2St/D) \times E \times F \text{ where,}$$

P = pressure in psi (maximum allowable operating pressure)

S = yield strength in psi

t = nominal wall thickness in inches

D = nominal outside diameter in inches

E = seam joint factor

F = design factor

$$P = (2 \times 70000 \times .354/36) \times 1 \times .72 = 991 \text{ psi (990 psi MAOP)}$$

The proposed operating pressure will be less than the maximum allowable pressure.

Subpart 3. Description of associated facilities.

For public information purposes, the applicant shall provide a general description of all pertinent associated facilities on the right-of-way.

The proposed 36-inch pipeline segments will be buried primarily within or adjacent to the Company's existing right-of-way and parallel to existing pipelines on the Company's multiple lines rights easements in the counties of Clearwater, Beltrami, Cass, Itasca, St. Louis and Carlton. Those areas not within the Company's existing right-of-way will be obtained through negotiations with Landowners by permanent easement grant. In most cases, the proposed 36-inch pipe will be located approximately 20 feet from the centerline of the closest existing pipeline on the right-of-way. Existing facilities within this right-of-way consist of approximately 97 miles of 18-inch, 36-inch and 34-inch pipelines with associated valves; 2 pump station locations (company owned land) with associated facilities including electrically driven centrifugal pumps; and valves ranging in size from 12-inch to 48-inch and cross-over piping between different diameters of mainline pipe.

In addition to the 36-inch pipeline, it is proposed to install mainline gate valves with remotely controlled electric motor operators. These valves will be on both sides of river crossings that are more than 100 feet wide (in accordance with 49 CFR 195.260E) and at appropriate sectionalizing locations in accordance with U.S. Department of Transportation Office of Pipeline Safety requirements. The applicant also proposes to install a sending scraper trap on the beginning of the new 36-inch loops.

The existing pipeline system is cathodically protected as stipulated by 49 CFR Part 195. As part of the cathodic protection system, rectifiers and anode ground beds are located along the right-of-way at numerous locations.

Subpart 4. Product capacity information.

The applicant shall provide information on planned minimum and maximum design capacity or throughput in the appropriate unit of measure for the types of products shipped as defined in part 4415.0010.

The planned design capacity of the proposed 36-inch pipeline is 678,000 barrels per day (BPD).

In determining pipeline capacity, consideration must be given to seasonal and batch cycle demands which result in a varied ability for a pipeline to transport liquids. Factors such as scheduled and unscheduled maintenance, equipment repair, receipt and delivery restrictions, crude oil availability and many others affect capacity. This will result in an annual capacity on the pipeline system of approximately 1,987,500 BPD.

Table 4415.0120-A shows the anticipated Lakehead system capacity by line as well as the changes proposed in the Terrace Expansion Project Phase III.

Table 4415.0120-A
Pipeline System Capacities
U.S. Portion

Before Terrace Phase III		After Terrace Phase III		
<u>Line #</u>	Annual Capacity BPD	<u>Line #</u>	Proposed Annual Capacity BPD	Effective Increases in Annual Capacity (BPD)
1	311,300	1	260,400	(50,900)
2	169,800	3 ¹	465,400	295,600
3B	510,700	2B ²	408,800	(101,900)
4	673,000	4 ³	678,000	5,000
13	174,900	13	174,900	0
Totals	1,839,700		1,987,500	147,800

¹Line 3 will receive five new pumping stations increasing its original capacity and Line 3 stations currently operating on Line 4 will revert to Line 3 operations.

²Line 2 stations currently operating on Line 3 will revert to Line 2 operation reestablishing its original capacity.

³Line 4 will receive two new pumping stations and approximately 97 miles of new pipeline in Minnesota increasing its existing capacity by 5,000 BPD.

Subpart 5. Product description.

The applicant shall provide a complete listing of products the pipeline is intended to ship and a list of products the pipeline is designed to transport, if different from those intended for shipping.

The proposed pipeline will be designed to and is intended to transport crude petroleum.

Subpart 6. Material safety data sheet.

For each type of product that will be shipped through the pipeline, the applicant shall provide for public information purposes the material identification, ingredients, physical data, fire and explosive data, occupational exposure limits, health information, emergency and first aid procedures, transportation requirements, and other known regulatory controls.

A Material Safety Data Sheet (MSDS) for crude oil, along with a "Crude Oil Information Sheet" which provide additional information on the properties of crude oil, are attached as Schedule 4415.0120-A and 4415.0120-B respectively.

CRUDE OIL INFORMATION SHEET

What Is Crude Oil?

Crude oil is the raw material from which we derive many of the products that drive our modern industrialized society. Crude oil is refined to yield more than 2,000 products ranging from asphalt to lubricants to fuels. Fuels such as gasoline, diesel and fuel oil account for 85% of the crude oil. Despite our familiarity with the products of crude oil, its composition, characteristics, and hazards may be unfamiliar.

Crude oil is a liquid mixture which contains over a thousand different compounds. These compounds primarily contain the elements hydrogen and carbon, hence they are often referred to as hydrocarbons. Crude compounds with few carbon atoms in them evaporate readily and are referred to as **"light ends"**. Compounds with many carbon atoms are referred to as **"heavy ends"**.

Description: Petroleum Crude Oil	UN #1267	Hazard Class: 3 (flammable liquid)
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Properties of Crude Oil

Color/Odor

Crude oil color varies but is typically black to dark yellow to brown or greenish black. It has a strong petroleum odor and may also have a "rotten egg" odor due to the presence of small amounts of hydrogen sulfide. (Crudes with little or no hydrogen sulfide are called "sweet", crudes with higher concentrations are called "sour").

Consistency/Solubility

The consistency of crude oil is variable; some are the consistency of gasoline, when fresh, others are more like motor oil. Crude oil floats on water and only tiny amounts of certain crude compounds actually dissolve into water.

Evaporation

Many compounds in crude oil readily evaporate when exposed to air. Crudes with more light ends will release more vapors than heavier crudes. Evaporation increases with higher temperature. During a spill, vapor concerns are the greatest in the first hours or days of a spill, or any time "fresh" crude is present, but diminishes rapidly with time.

Potential Hazards of Crude Oil

The potential hazards of crude oil include flammability and exposure to hydrogen sulfide, and volatile (capable of evaporating) petroleum compounds, including benzene. During spill situations, Lakehead employees monitor these hazards, with special equipment, to ensure that employee and public health is protected.

Flammability

All spill situations are initially treated as highly flammable and potentially explosive until verified otherwise. This is due to the fact that flammability varies greatly depending upon the type of crude oil. Crudes with a high concentration of lights ends are very flammable, easily catching fire like gasoline. Crudes with a high concentration of heavy ends are much less flammable; difficult to ignite but burn readily once started. In addition to flammability concerns, crude oil vapors may become explosive if they accumulate above certain concentrations.

Hydrogen Sulfide

It is the hydrogen sulfide and other sulfur containing compounds that may give crude oil a "rotten egg" smell. While unpleasant, the air concentration at which these compounds can be smelled is well below toxic levels. At higher levels hydrogen sulfide can irritate the eyes, nose and lungs, or cause dizziness, headaches or nausea. If these symptoms appear, a person must be removed to fresh air immediately and the symptoms will disappear in a short time. Higher exposures may lead to unconsciousness and death. Dangerous levels of hydrogen sulfide gas are usually limited to confined areas such as tanks, buildings and low areas with little or no air movement.

Petroleum/Benzene

Short term skin contact with crude oil may lead to irritation of the skin. Repeated and/or prolonged exposure can lead to more serious skin problems. Contact with petroleum should be avoided through the use of protective clothing. Petroleum should be removed from skin by prompt washing with soap and water. Swallowing crude oil is likely to make a person sick. Extreme quantities would be necessary to be fatal.

Of the hundreds of compounds in crude oil, benzene is the most toxic volatile petroleum component. Benzene content of crude oils vary greatly, but the maximum for a crude oil transported by Lakehead is 0.5%. (This is considerably less than gasoline which may contain up to 3.5% benzene.) Short term high exposures to petroleum vapors, (including benzene), can cause dizziness, headache, nausea, etc. If these appear, a person must be removed to fresh air immediately, and the symptoms will disappear in a short time. No evidence exists to suggest that short term exposures to petroleum vapors or benzene causes long term health problems.

Long term health problems have not been associated with long term, high exposure to petroleum vapors. Long term (5-30 years) exposures to high benzene vapor levels are associated with leukemia and other blood producing organ diseases in humans. The human immune system can also be damaged by long term benzene exposures.

Worker exposure to petroleum and benzene vapors is regulated by OSHA. Limited sampling performed by Lakehead personnel suggests that benzene exposures from crude oil spills are minimal, and well below the OSHA limit. Dangerous levels of petroleum vapor and benzene are usually limited to confined areas such as tanks, buildings and low areas with little or no air movement.

4415.0125 LAND REQUIREMENTS

For the proposed pipeline, the applicant shall provide the following information:

A. permanent right-of-way length, average width, and estimated acreage:

The proposed 97 miles of 36-inch pipeline will be installed on and/or adjacent to the existing right-of-way. In certain areas and on public lands we need to acquire widened right of way permits or additional easements to accommodate encroachments or natural features. For example, on national forest and county lands we are asking for an additional 20 feet adjacent to the existing permit. The existing right-of-way has an average width ranging from 60-125 feet. This results in minimal additional permanent right-of-way which encompasses approximately 72 acres.

B. temporary right-of-way (workspace) length, estimated width, and estimated acreage:

The Company proposes to obtain, from Landowners, temporary right-of-way averaging 70 feet in width to facilitate construction. Based on approximately 97 miles, this will impact approximately 823 acres. Temporary right-of-way will revert to Landowners upon completion of construction. Additional temporary workspace adjacent to the construction right-of-way may be necessary during construction in areas such as steep slopes and staging areas for stream, wetland, and road crossings, for safety reasons, to provide an area for prefabrication of sections of pipeline, or storage of spoil material. Lakehead will acquire additional workspace from the Landowner where necessary; however in all cases, the size of extra workspace will be kept to the minimum required to safely conduct work.

C. estimated range of minimum trench or ditch dimensions including bottom width, top width, depth, and cubic yards of dirt excavated:

Trenches will be dug utilizing a backhoe or crawler-mounted wheel type ditching machine. Typically, the ditch depth will be a minimum of 72 inches deep, to allow for a minimum of 36 inches of ground cover to the top of the pipe. Trench width will be a minimum of 52 inches. The total excavation will consist of a minimum of 493,200 cubic yards of soil.

D. minimum depth of cover for state and federal requirements:

In accordance with federal requirements (49 CFR Part 195.248), the depth of cover between the top of the pipe and the ground level, road bed or river bottom ranges between 18 to 48 inches, depending on the location and presence of rock.

State law requires that a minimum depth of cover of 54 inches be maintained in certain areas unless waived by the Landowner.

Since the adjacent pipelines are buried in accordance with federal requirements, both safety and land use considerations have led the Company to propose the installation with a minimum 36-inch depth of cover. This approach will:

- minimize the amount of soil excavated thus lessen the total acreage temporarily impacted;
- avoid the potential perception by future excavators that all other parallel pipes are also at a 54-inch depth;
- presents no further limit on deep plowing, because the other pipelines within the existing easement already present limitations on depth of plowing;
- facilitate crossings of the pipelines at similar depths by other facilities.

To facilitate this, where necessary, Landowners will be asked to waive the 54-inch minimum cover requirements, as was done during the 1994 and 1998 expansion projects.

E. right-of-way sharing or paralleling: type of facility in the right-of-way, and the estimated length, width, and acreage of the right-of-way:

The proposed pipeline will be constructed within and/or adjacent to existing right-of-way and parallel to existing facilities explained in Section 4415.0120 Subpart 3, Description of Proposed Pipeline and Associated Facilities. No other facilities owned by other parties share the existing route. However, the proposed route often parallels other railroads, pipelines, highways, and other utilities.

4415.0130 PROJECT EXPANSION

If the pipeline and associated facilities are designed for expansion in the future, the applicant shall provide a description of how the proposed pipeline and associated facilities may be expanded by looping, by additional compressor and pump stations, or by other available methods.

As proposed, there will two new pump stations in Minnesota connected to the 36-inch pipeline. Future increases in throughput could be accommodated by the addition of pump stations, loops and flow improvers.

Lakehead does not own any of the crude petroleum or natural gas liquids that it transports and the need for capacity expansion is driven by requests that the petroleum producers make upon Lakehead. For this reason, the Company cannot accurately predict the scope or timing of additional facility expansion phases. There is no final agreement between the Company and the petroleum producers for additional phases within Minnesota.

**4415.0135 RIGHT-OF-WAY PREPARATION PROCEDURES AND CONSTRUCTION
ACTIVITY SEQUENCE**

Each applicant shall provide a description of the general right-of-way preparation procedures and construction activity sequence anticipated for the proposed pipeline and related facilities.

The steps involved in the construction and installation of mainline pipe are described below. To assist the readers of this application, the Company has prepared a "Typical Phases of Pipeline Construction" diagram which summarizes the stages of this project (attached as Map L). The Company has proposed to install the 36-inch loops within and/or adjacent to existing multiple line rights easements.

1) Site Assessment and Planning

An aerial flyover of the existing right-of-way has occurred and an aerial photo map set has been developed. Various company and public maps and databases about the route have been reviewed to assist in developing site-specific procedures for construction activities at sensitive areas. These procedures are discussed more thoroughly in Section 4415.0150, Right-of-Way Protection and Restoration Measures. The Company's land agents will be contacting Landowners to identify and discuss special construction conditions, such as fencing, drainage systems, and private roads on private parcels of land. These land agents will maintain close contact with Landowners along the route prior to, during and after construction. They will also act as liaison between contractors, Landowners and pipeline inspectors assigned by each county.

Any special environmental construction practices will be included as part of the construction contract specifications. A copy of the alignment sheet set has been provided to the Environmental Quality Board as part of this application. These requirements, along with Landowner requests, will be specified on a construction list to be provided to pipeline construction crews, land agents and environmental inspectors to ensure that Landowner and environmental concerns are addressed.

2) Preparation of the Right-Of-Way

Landowners have been contacted by mail to advise them of Lakehead's proposed project and that survey crews will be working along the proposed route. Additionally, each landowner will receive a copy of this application. The Company is committed to giving Landowners complete information about the project and keeping them informed throughout the construction and right-of-way restoration process.

After the construction areas are clearly staked, the construction workspace will be cleared and contoured to a general width of 100 feet.

Cutting and/or removal of vegetation and above ground obstacles will be done only to the extent necessary to provide suitable access for construction and safe operation and maintenance of the pipeline.

Storage areas required for equipment, pipe, and other materials will be acquired through permission from private businesses or Landowners. Each storage area may encompass up to 15 acres.

Fences will be opened when encountered within the construction area or if necessary for right-of-way access. Adequate support or bracing will be installed before opening a fence. Damaged fences, gates, and cattle guards will be restored to the original condition or replaced, if necessary, upon completion of construction. Access and livestock control will be employed during construction to reduce Landowner inconvenience.

3) Clearing and Grading

Clearing of the right-of-way will follow regulatory permit conditions and Landowner considerations. Clearing will be limited to the extent needed for construction access and pipeline operation. Shelter-belts and trees will be protected to the extent possible. In areas where timbering is required, the trees will be cut and stacked along the right-of-way or removed based on the Landowners' preferences. Windbreaks will be replanted at the Landowners request. Stumpage height will be as low as possible. Stumps will only be removed when necessitated by pipeline installation or at the request of the Landowner. Debris created from preparation of the right-of-way will be disposed of at a licensed composting or disposal sites, mulched, burned or otherwise handled using Landowner approved methods and in accordance with applicable rules.

Personal litter and other miscellaneous debris generated by construction crews will be collected daily and stored adequately until proper disposal at approved facilities.

Grading on the right-of-way will be done to the extent needed to ensure the safe movement of equipment along the installation route of the pipeline. In some limited areas, 100-foot wide workspace may not be sufficient. Where necessary, road materials will be obtained from appropriate sources (e.g., commercial sources, or adjacent lands) with

permission from land management agencies or private Landowners. Grading and cut-and-fill excavation will be performed to minimize effects on natural drainage and slope stability. Graded areas will be restored to original contour upon completion of construction.

4) Trenching

Prior to any excavation activity, the Gopher-State Excavation One-Call system will be notified as required to ensure all utilities are properly marked to ensure protection. The Company crews will mark adjacent pipelines. All other safety precautions will be adhered to as required by Company safety practices and worker safety regulations.

Trenching is typically accomplished using a backhoe or crawler-mounted, wheel-type ditch digging machine. Alternative methods will be used as required by permits to work in environmentally sensitive areas as further discussed in Section 4415.0150, Right-of-Way Protection and Restoration Measures. The ditch (trench) will be excavated to a depth that allows adequate cover as specified in Section 4415.0125, avoiding interference with farming and other normal land uses. Where the pipe crosses highway or road right-of-way, the crossing procedures will be described in the road-crossing permit as required. Paved road crossings will be bored so as not to interfere with traffic.

Additional measures to protect livestock and crops during excavation activities will be arranged. Precautions will also be taken to adequately protect, repair and/or replace damaged drainage systems (ditches, drainage tiles, etc.).

In cultivated lands and unsaturated wetlands, topsoil will be removed and stockpiled separately from subsoil. This will allow for proper restoration of the soil during the backfilling process. Soil banks will be designed to prevent storm runoff water from backing up or flooding.

Compaction of subsurface soils in cultivated lands will be minimized by avoiding heavy construction activity during prolonged rains. Precautions to avoid subsoil compaction may need to be taken in other sensitive areas and will be performed as required by permits (as referred to in Section 4415.0150, Right-of-way Protection and Restoration Measures).

Precautions will be taken to protect against pollution of the environment by construction equipment. Refueling areas for overland equipment will be located a minimum of 100 feet from waterways. Specific requirements for reporting and responding to fuel spills or other

instances of this type will be specified in the contract specifications. In addition, the Company has developed a comprehensive emergency response plan and maintains spill equipment as explained in Section 4415.0160, Operation and Maintenance.

5) Hauling and Stringing Pipe

Coated pipe, valves and fittings will be transported to intermittent points along the right-of-way by truck from the storage yards. The materials will be placed along the right-of-way by side boom tractors or mobile cranes. On-going communication and updates with Landowners will greatly assist in identifying special access requirements, which will prompt special equipment storage or pipe stringing procedures. Special access measures will be taken to minimize crop damage and movement of livestock.

6) Bending

After the sections (joints) of pipe are strung along the trench, individual joints are bent to conform to the contours of the trench and terrain. The length of a joint of pipe will be nominally 80 feet. A track-mounted, hydraulic pipe-bending machine is normally used for this purpose. The pipe bend may also be fabricated in a factory if multiple or complex bends are required.

7) Line-up, Welding and Weld Inspection

Installation of the pipe commences with the cleaning of the pipe ends. Each consecutive joint is lined up with the previous and held until it is securely joined by welding.

Welding is one of the most important phases of pipeline construction. Welding procedures have been developed and are tested to strict national industry standards and pipeline safety regulations. Welders are pre-qualified and tested to ensure proficiency in pipeline welding.

Although regulations require only 10% of the field welds to be tested, every weld will be inspected by non destructive examination (NDE) to determine the quality of the weld. NDE is a non-destructive method of inspecting the inner structure of welds and determining the presence of defects. Weld defects will be repaired or removed as outlined in the industry standard, American Petroleum Institute Standard 1104. After weld defects are repaired, the weld will be tested again to verify the quality of the weld.

8) Field Coating

The pipe will be factory coated for protection against corrosion. Before the pipe is lowered into the trench, all field welds will be field coated following application procedures in the contract specifications. Once completed, the entire coating will be inspected. Flaws in the coating will be field-repaired. Sections of prepared pipeline will rest on padding prior to being lowered into the trench.

9) Lowering In

Special side boom tractors will be spread out along a pipeline segment to simultaneously lift the line and move it over the open trench. The segment of pipe will then be lowered into the trench. Crossing of existing underground lines will require specialized construction techniques.

10) Backfilling

Backfilling will be accomplished using precautions to protect the pipe and pipecoating from damage due to rocks. Large rocks not appropriate for backfill will be removed from the property so as not to interfere with land use. Angle blade dozers, draglines or backhoes will normally be used to first replace the subsoil and then carefully replace the topsoil. A crown of backfill will be formed over the trench to allow for soil settlement, except where it would alter water drainage.

11) Tie-Ins

Interconnections to existing lines (Tie-ins) are classified in two ways: "Cold" or "Hot". A cold tie-in will be performed when the interconnection is made at a point isolated from the system, with no exposure to crude oil (i.e. downstream side of a closed valve.). Cold tie-ins will be performed by pipeline contractors. A hot tie-in will be made if the existing line, at the interconnection point, contains crude. This section may be under pressure or may have crude flowing through it. Special procedures will be implemented (such as draining or reducing flow in the line) and these tie-ins will generally be performed by Lakehead's own pipeline maintenance crews.

12) Pressure Testing

After backfilling is complete, the pipeline will be tested to ensure that the system is capable of withstanding the operating pressure for which it was designed. This hydrostatic testing procedure will be implemented following test procedures set forth in federal regulations 49 CFR Part 195. Water appropriation permits will be obtained as needed. The five sections totaling 97 miles will be tested requiring up to 27 million gallons of water. This water will be returned to its source or discharged to the ground in accordance with state regulation.

13) Cleanup and Right-Of-Way Restoration

The contractor will be instructed to return the soil as near as possible to its original condition. Soil compaction on cultivated land will be kept to a minimum and confined to as small an area as practicable. When compaction unacceptable to the Landowner occurs, the area will be uncompacted as needed, or restored as arranged with the Landowner.

Disturbed areas will be restored as nearly as possible to conditions present prior to construction. This may include the removal of any temporary roads, additional grading to correct for soil settling, seeding of the right-of-way as required, and removal of clearing and construction debris.

After construction and completion of final cleanup, the Company's land agents will contact Landowners to address additional concerns or restoration issues. The contractor will not be discharged until Landowners are reasonably satisfied with cleanup and land restoration efforts. Subsequently, the Company will request that a damage release form be signed by the Landowner, indicating cleanup was satisfactorily completed.

4415.0140 LOCATION OF PREFERRED ROUTE AND DESCRIPTION OF ENVIRONMENT

Subpart 1. Preferred route location. The applicant must identify the preferred route for the proposed pipeline and associated facilities, on any of the following documents which must be submitted with the application:

- A. United States Geological Survey topographical maps to the scale of 1:24,000, if available;**
- B. Minnesota Department of Transportation county highway maps; or**
- C. aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the board.

County highway maps showing the location of the proposed route are provided in the Map section of this application (see Maps D through I).

Subpart 2. Other route locations.

All other route alternatives considered by the applicant must be identified on a separate map or aerial photos or set of maps and photos or identified in correspondence or other documents evidencing consideration of the route by the applicant.

No alternative routes were considered. With respect to alternatives, Lakehead's route along existing pipeline rights-of-way appears to be the most practical and feasible alternative. Constructing new pipeline within and/or adjacent to an existing permanent right-of-way minimizes environmental impacts and additional land encumbrances. Co-location avoids creating significant new areas of disturbance or new rights-of-way, will limit affects to private property right-of-way owners, and facilitates efficient operation and maintenance for safe pipeline operation.

Subpart 3. Description of environment.

The applicant must provide a description of the existing environment along the preferred route.

Lakehead has prepared an environmental report for the Terrace Expansion Project Phase III that provides a description of the existing environment along the proposed route, an analysis of potential human and environmental impacts, and a discussion of measures that will be taken to protect and restore the right-of-way and to mitigate adverse impacts. A summary of the existing environmental conditions along the pipeline route is provided below. Additional details regarding the existing environment are provided in the supplemental environmental report (Environmental Impact and Restoration Analysis). This report is available from the Company upon request.

Socioeconomics

Lakehead's Terrace Expansion Project Phase III will be constructed in six counties in northern Minnesota, including (from west to east) Clearwater, Beltrami, Cass, Itasca, St. Louis, and Carlton Counties. These counties are generally characterized by lower population densities, lower per capita income, and large areas of undeveloped land.

Population density (an indicator of extent of development) ranges from 8.3 people per square mile in Clearwater County to 35.4 people per square mile in Carlton County. Carlton and St. Louis Counties have higher population densities due to the presence of Cloquet and Duluth, respectively. The average population density in the project area is 19.9 people per square mile, which is substantially lower than the statewide average of 57.8 people per square mile (Gaquin et al. 1998).

There are approximately 18 cities/towns and 18 townships located within approximately one mile of the proposed pipeline route in Minnesota. Bemidji, Grand Rapids, and Cloquet are the largest populated communities within the project area, with 2000 populations of 11,197, 7,764, and 11,201 respectively. The majority of the communities within the project area have populations of less than 1,000 persons. Communities that will actually be crossed by the project include Leonard (population 29), Wilton (population 186), Bemidji (population 11,197), Cass Lake (population 860), and Cohasset (population 2,481) (Minnesota Planning Web-site).

Land Use

Based upon an evaluation of aerial photographs, the predominant land use in the project area is forest land, which accounts for 63 percent of the total pipeline route length. Other land uses in descending order of prevalence include open land (23 percent); agricultural land (11 percent); residential (1 percent); industrial/commercial (1 percent), and open water (1 percent).

The Clearbrook Loop crosses the largest amount of forest land (18.4 miles) and agricultural land (4.5 miles). The Minnesota portion of the Wrenshall Loop crosses the least amount of forest land (1.2 miles) and the second largest amount of agricultural land (3.5 miles).

There are limited residential areas located along the pipeline route. Approximately 260 residences are located within 500 feet of the pipeline. Many of these residences and most of the residential land are located along the Cass Lake Loop pipeline route in the city of Cass Lake.

The project will cross 97 roads, including Federal, state, county, city/township, forest, and private roads. Three of these roads (i.e., U.S. Highway 2, County Highway 7, MN Highway 38) are Federally or state-designated scenic highways. The project will also cross 5 railroads and 2 old railroad grades.

Terrain and Geology

The topography along the pipeline route is generally flat to gently rolling, ranging in elevation from approximately 900 feet mean sea level (MSL) to 1,400 feet MSL as determined from reviewing United States Geologic Survey topographic maps.

The project route crosses extensively glaciated terrain. Surficial geology along the route is characterized by glacial outwash, ground and end moraines, and glacial lake sediments deposited by the Des Moines, Wadena, and Superior Lobes of Wisconsin age. The proposed route crosses no locally unique or geologically significant topographic features.

Precambrian-aged crystalline and metasedimentary bedrock underlies the project area. A small area of Cretaceous-aged sandstone and shale underlies portions of the Deer River Loop. There are no areas with shallow bedrock crossed by the proposed pipeline loops and depth to bedrock generally is greater than 100 feet below the ground surface.

Soils

The proposed pipeline route crosses soils that were formed from a variety of parent materials including sandy, silty, and loamy glacial tills and moraines, lacustrine sands, silts and clays, and sandy outwash. Glacial till and outwash plain material predominates the Clearbrook and Cass Lake Loops and lacustrine plain material is prevalent in the Deer River and Wrenshall Loops. The parent material in the Floodwood Loop consists of a mixture of glacial till, moraine, and lacustrine plain. Soil composition in the project area consists of predominantly of well-drained sandy soils and well-drained deep silty or loamy soils. Most of these soils (approximately 94 percent) have topsoil depths less than 6 inches.

Vegetation, Wildlife, and Fisheries

The majority (63 percent) of the proposed route crosses forest land. The project will be constructed in the deciduous forest woodland biome. Historically, pine forests dominated this area. Disturbances such as logging and fire have removed much of the pine component from the region allowing pioneer species such as birch and aspen to replace the pine. Agriculture has also created significant changes to the landscape along portions of the route. Approximately 70 percent of the Minnesota portion of the Wrenshall Loop crosses agricultural land and approximately 15 percent of the land along the Clearbrook Loop have been converted to agriculture.

Aspen-birch forest is the most common upland forest type in the project area. This forest type dominates the upland portions of the Clearbrook, Deer River and Floodwood Loops. The upland areas along the Cass Lake Loop are dominated by pine and pine-hardwood forests. A portion of this loop crosses an area in the Chippewa National Forest that has been identified as a Candidate Old Growth Complex (i.e., mature and old growth forest stand of predominantly long rotation tree species) by the U.S. Forest Service (USFS). The Minnesota portion of the Wrenshall Loop contains northern hardwood forests dominated by birch and maple. The lowland portions of the project vary by loop. The lowlands crossed by the Clearbrook Loop are primarily

emergent wetlands. The Cass Lake Loop crosses areas of forested swamps and emergent marshes. The Deer River and Floodwood Loops cross the highest proportion of wetlands, including primarily emergent marshes and forested swamps.

Wildlife habitats within this deciduous forest woodland zone are diverse and include open areas, wetlands and forested areas. Some of the common mammalian species in deciduous forests include white-tailed deer, eastern cottontail rabbit, woodchucks, raccoons, skunks, gray and fox squirrels, gray and red fox, and several species of bats. The structural diversity of the forest provides a variety of habitats that can support a large number of avian species, including songbirds, hawks, and owls.

The project will cross perennial and intermittent streams, lakes, and ditches in Minnesota. Most of these waterbodies contain warm water fisheries. The Clearbrook Loop crosses the Clearwater River and a tributary to the Clearwater River at locations designated as trout waters. Game fish species that may occur in the major river and stream crossings in the project area include: northern pike, muskellunge, walleye, sauger, yellow perch, largemouth bass, smallmouth bass, crappie, bluegill, channel catfish, and sunfish. Other non-game and forage fish species may include: carp, bullhead, suckers, sculpin, burbot, redhorse, and minnows.

A search of the Minnesota Natural Heritage database indicates that there is one Federally listed species (bald eagle) and four state-listed species (peregrine falcon, Triangle Moonwort, Ram's-Head Lady's-Slipper, and Pale Moonwort) known to occur within approximately one mile of the project. The U.S. Fish and Wildlife Service indicated that the home ranges of two other Federally listed species (gray wolf and Canada lynx) are located in the vicinity of the project but no known occurrences of these species have been recorded in the project area.

The USFS maintains a list of sensitive wildlife and plant species for the National Forests. Lakehead has obtained this list and is working with USFS biologists from the Chippewa National Forest to determine whether any of these designated sensitive species occur within the portion of the pipeline route that crosses the Chippewa National Forest. Lakehead will be working with the USFS to complete a Biological Evaluation for the portion of the project crossing the Chippewa National Forest.

Water Resources – Groundwater

Groundwater quality and quantity is primarily a function of the region's geologic and hydrogeologic setting. Thick glacial sediments, including till, outwash, buried outwash, and lacustrine deposits, cover much of the project area. Groundwater yields from these glacial deposits vary, but typically range from less than 1 gallon per minute (gpm) in till and lacustrine deposits to greater than 500 gpm from outwash and buried outwash deposits. Well depths in the glacial deposits typically range from approximately 30 to 380 feet.

Principal bedrock aquifers from northwest to southeast include the Precambrian undifferentiated, the Biwabik-Iron Formation, the Metasedimentary, and the Mount Simon-Hinkley. Water well yields in these aquifers typically range from 5-

70 gpm in the Precambrian and Metasedimentary crystalline aquifers to 250-750 gpm in the Biwabic and Mount Simon-Hinkley aquifers. Well depths in the bedrock aquifers typically range from 30 to 1,130 feet.

Based on reviews of the Minnesota Department of Health water well database and the Minnesota Geologic Supply Water Well Index database, there are two public water supply wells located within 100 feet of the pipeline route and 26 domestic wells located within 200 feet of the pipeline route.

Water Resources – Surface Water

A total of 36 waterbodies crossed by the project were identified in Minnesota, of these waterbodies crossed, 23 are designated as Minnesota Protected Waters. Four of these Protected Waters are lakes and the others are streams, rivers, and ditches. In addition, the project crosses one wetland identified as a Protected Water. The majority of the waterbodies crossed by the project support warmwater fisheries; however, two are designated as trout streams (Clearwater River and an associated tributary). Five waterbodies are identified as intermittent streams on the USGS topographic maps and three are public drainage ditches.

Two large rivers are crossed by the project: the Mississippi River in Beltrami County and the Prairie River in Itasca County. Both of these rivers are greater than 100-feet wide at the crossing location.

Wetlands along the proposed pipeline corridor were field located during the summer of 2000 and 2001. Wetlands were identified and mapped in general accordance with the Routine Determination Method as specified in the *Corps of Engineers Wetland Delineation Manual* (United States Army Corps of Engineers, 1987). A total of 343 wetlands were identified within a 200-foot-wide survey corridor along the pipeline route. Of these 343 wetlands, 169 wetlands are crossed by the centerline of the proposed pipeline in Minnesota. One wetland crossed is identified as a protected basin on Minnesota Protected Waters maps.

A total of approximately 28 lineal miles of wetlands will be crossed by the project in Minnesota. Most of these wetlands are located in the Deer River and Floodwood loops (approximately 11.7 and 6.5 miles of wetland, respectively). The Clearbrook and Cass Lake loops each cross approximately 4 and 5.4 miles of wetland, respectively. Predominant wetland types crossed by the project are emergent and forested wetlands.

Cultural Resources

A thorough cultural resources review of the project area was conducted during the initial planning stages of the project. This preliminary work included a file search and literature review and development of a model of archeological sensitivity for the Phase I survey of the route. The literature search indicated that there were ten previously identified archaeological sites and four historic properties within the project area. The literature search documented that none of these fourteen cultural resources were evaluated for eligibility on the National Register of Historic Places (NRHP).

Lakehead has conducted or is in the process of conducting Phase I cultural resource surveys of the project area in Minnesota. The Leech Lake Heritage Sites Program in 1999 conducted a Phase I survey of the Cass Lake Loop. The SHPO and USFS archeologists for the Chippewa National Forest have reviewed and approved the findings of the Phase I report. The survey identified five archaeological sites along the Cass Lake Loop which were recommended as potentially eligible for the NRHP. Phase II testing of these sites is being completed in the summer of 2001. None of the previously recorded sites identified during the literature search were found during the Phase I survey. Additional Phase I surveys of the Cass Lake Loop are being conducted in 2001 to address minor route adjustments which have occurred since 1999. Phase I surveys of the Clearbrook, Deer River, Floodwood, and Wrenshall loops were conducted in the summer of 2000 by the 106 Group, Ltd. Preliminary Phase I survey reports for these four loops were submitted during winter 2001 to the Corps of Engineers for review.

Portions of two Native American Reservations are crossed by the project in Minnesota. The Cass Lake Loop crosses the Leech Lake Reservation and the Floodwood Loop crosses the Fond du Lac Reservation. Lakehead is consulting with resource management staff of both reservations to assess and mitigate potential impacts on tribal land.

Federal, State, and County Recreational Areas

Designated recreational areas crossed by the pipeline project in Minnesota include the Mississippi River, the Prairie River, the Chippewa National Forest, three state forests, one state trail, one state game refuge, and four county forests. The pipeline route will not cross or affect any federally designated wildlife refuges, federally designated waterfowl production areas, National Natural Landmarks, or National Scenic Trails in Minnesota.

The Mississippi River is classified as scenic at the proposed crossing location but is not a designated National Wild and Scenic River. The river is also designated a state canoeing and boating route at the proposed crossing location.

The Prairie River is also classified as scenic at the proposed crossing location but is not a designated National Wild and Scenic River. The river is listed on the Nationwide Rivers Inventory as a candidate for National Wild and Scenic or Recreational River.

The Cass Lake Loop will cross approximately 18 miles of the Chippewa National Forest. Approximately 12 miles of land crossed within the Chippewa National Forest is federally owned and managed by the USFS. State forest land and tribal land are also crossed within the proclamation boundary of the National Forest.

The pipeline route will cross approximately 21 miles of designated state forests and approximately 7 miles of state-owned forest land managed by the Minnesota Department of Natural Resources. The state forests consist of the Mississippi Headwaters State Forest, the Bowstring State Forest, and the Fond du Lac State Forest. Most of the state-owned land is located along the Cass Lake Loop.

The pipeline route will also cross approximately 17 miles of county-owned land on the Clearbrook, Deer River and Floodwood Loops.

4415.0145 ENVIRONMENTAL IMPACT OF PREFERRED ROUTE

The applicant must also submit to the board along with the application an analysis of the potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures. These impacts include but are not limited to the impacts for which criteria are specified in part 4415.0040 or 4415.0100.

The Terrace Expansion Project Phase III involves the construction of a new pipeline adjacent to several existing pipelines, primarily within and/or adjacent to an existing right-of-way. Construction of the new line will cause temporary disruption, but will not result in substantial long-term changes to the environment. A summary of potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures is provided below. Additional details regarding potential human and environmental impacts of the project are provided in the supplemental environmental report (Environmental Impact and Restoration Analysis).

Socioeconomics

The six northern Minnesota counties crossed by the project (Clearwater, Beltrami, Cass, Itasca, St. Louis, and Carlton Counties) will experience both short and long-term socioeconomic impacts associated with the construction and operation of the pipeline project. In the short term, there will be an increase in the use of local services, which should be more than offset by the short-term increased expenditures in the area. During construction of the project, there will be a temporary increase in the local population, an increase in demand for temporary housing, a short-term increase in the use of traffic systems, and expenditures in the local economies for goods and services. In the long-term, the Lakehead pipeline system will continue to benefit local economies along the route. Long-term benefits associated with the operation of the pipeline system include payment of local property and/or ad valorem taxes; purchases of services, materials and supplies from local businesses, and periodic employment for various operation and maintenance activities. Lakehead now pays about \$10,900,000 in property taxes (2000 estimated) within Minnesota. The total assessed value resulting from the expansion will increase the estimated property taxes by about \$3,500,000 in the six counties affected by this project.

Land Use

Construction of the Terrace Expansion Project Phase III will temporarily affect approximately 1,180 acres of land in Minnesota. Total land area affected by construction and operation of the pipeline in Minnesota is summarized below by land use categories:

<u>LAND USE</u>	<u>LAND AREA AFFECTED BY CONSTRUCTION¹ (ACRES)</u>	<u>LAND AFFECTED OPERATIONS² (ACRES)</u>	<u>AREA BY</u>
Open Land	371.8	52.6	
Forest Land	592.8	148.7	
Agricultural Land	147.5	26.7	
Residential Land	19.0	3.2	
Commercial/Industrial Land	11.4	1.9	
Open Water	5.9	1.2	
Total	1,184.4	234.3	
1 Based on 100-foot-wide construction right-of-way and extra workspace areas outside of this right-of-way			
2 Based on 20-foot-wide permanent right-of-way.			

The predominant land use types affected by the project are open land and forest land. Open land consists of non-forested uplands and wetlands, including pasture; old fields; scrub-shrub, emergent, and open riparian wetlands; and the portion of the construction right-of-way in forest land that overlaps the existing maintained right-of-way. Forest land consists of both upland and wetland forests and woodlots.

Approximately 372 acres of open land will be temporarily disturbed during grading, trenching, backfilling and restoration. A portion of this disturbed open land will be located within the existing maintained right-of-way. After final construction clean up, the open land in upland areas will be reseeded and mulched. The non-forested wetlands will be seeded with an annual cover crop and allowed to revegetate naturally.

Approximately 593 acres of forest land will be temporarily disturbed during construction of the Minnesota portion of the project. Approximately 149 acres of forest will be permanently converted to shrub and herbaceous cover types as the result of routine maintenance practices along the new pipeline. The 444 acres of trees temporarily cleared from the construction right-of-way and extra workspaces will eventually grow back and redevelop forest communities. Lakehead will compensate landowners a fair market value for merchantable timber removed during construction of the pipeline.

Approximately 148 acres of agricultural land will be temporarily disturbed during construction of the Minnesota portion of the project. Most of this agricultural land is located along the Clearbrook and Wrenshall Loops. Construction activities will temporarily utilize active cropland within construction work areas. Construction activities may also interfere with planting or harvesting, depending on the construction season. After construction is completed, agricultural activities will be allowed to resume in the pipeline corridor. Landowners will be compensated for crop losses and other damages caused by construction activities.

Terrain and Geology

The effects of the pipeline project on the local topography will be temporary and limited to the construction phase of the project. Topographic modifications will be necessary in areas with steep topography to provide level and safe working

conditions. Following construction, the right-of-way will be restored to original contours to the extent practicable.

The project will not be constructed across any active mining areas. However, there is a potential that future use of sand and gravel resources would be precluded where the pipeline is installed across deposits of these resources. Because the proposed pipeline will be installed adjacent to existing pipelines and primarily within existing maintained right-of-way, any sand and gravel deposits in the pipeline corridor are currently unavailable for mining.

Soils

Pipeline construction activities that have the potential to adversely affect soils include, but are not limited to, clearing and grading of the construction right-of-way and extra workspaces, trenching, backfilling, and restoration. Potential effects include erosion due to the action of water or wind, especially on steep slopes and non-cohesive soils; reduction of soil productivity by mixing topsoil with subsoil or by introducing subsurface rock; soil compaction and rutting due to heavy equipment traffic; and poor revegetation success. Lakehead will minimize or avoid these potential adverse impacts to soils by implementing mitigative measures and best management practices as described in its Environmental Mitigation Plan.

The majority (approximately 74 percent) of the proposed pipeline route crosses nearly level to gently rolling terrain with slopes less than 5 percent and therefore is not susceptible to water erosion. Based on an analysis of soil types crossed by the project, approximately 19 percent of the project route is considered highly erodible land and approximately 53 percent of the project route is considered highly wind erodible. Most of the highly erodible land occurs in the Clearbrook and Cass Lake Loops. Lakehead will use best management practices to minimize impacts associated with water and wind erosion.

Mixing of soil horizons during construction could adversely affect soil productivity of agricultural lands and reduce the revegetation success of residential land by mixing topsoil with less productive subsoil. Most of the soils in the project area have shallow topsoil depths and are not well suited for agricultural production. Lakehead will minimize impacts on these shallow soils by removing the topsoil from the trench and spoil storage area in annually cultivated or rotated croplands, hayfields, residential land, and other areas at the landowner's request. The stripped topsoil will be returned to its approximate original position after installation of the pipeline and rough grading of the right-of-way.

Vegetation, Wildlife, and Fisheries

Clearing of herbaceous vegetation during construction is anticipated to be a short-term impact. Active revegetation measures and rapid colonization by annual and perennial herbaceous species in the disturbed areas will restore most

vegetative cover within the first growing season. Clearing of woody shrubs and trees from approximately 593 acres of forest land will be the primary longer-term impact on vegetation associated with the project. Woody shrubs and trees will be allowed to recolonize the temporary construction right-of-way and extra workspaces. However, recolonization of disturbed areas by woody shrubs and trees will be slower than recolonization by herbaceous species. As natural succession is allowed to proceed in these areas, the early successional or forested communities present before construction will eventually re-establish.

Construction and operation of the project is not expected to have a significant impact on wildlife. Temporary impacts will occur during construction due to clearing of vegetation and disturbance of soils in the right-of-way. Longer-term impacts will be limited to a loss of forest habitat as a result of clearing the construction right-of-way and extra workspaces that are located in forested areas. Longer-term effects on wildlife species will be limited because the pipeline loops will be co-located with an existing pipeline corridor. Overall, construction and operation of the project will not significantly alter the character of the landscape along the pipeline route.

A potential long-term impact on wildlife is associated with the clearing of forest vegetation. The project is parallel to an existing, maintained right-of-way thereby decreasing impacts to undisturbed forests. The project will involve the permanent removal of 149 acres of forested habitat for the maintained right-of-way. These areas will be permanently converted to non-forest habitat for the life of the pipeline. It is anticipated that the incremental loss of this forested habitat along the existing cleared right-of-way will not have a significant effect on wildlife species in this forested region of Minnesota.

The pipeline will be installed across most waterbodies using the conventional, open cut crossing method. This crossing method may temporarily affect the movement of fish upstream and downstream of the crossing site. The physical disturbance of the streambed may temporarily displace adult fish and may dislodge other aquatic organisms, including invertebrates. Some limited mortality of less mobile organisms such as small fish and invertebrates may occur within the trenching area. Aquatic plants, woody debris, and boulders that provide in-stream fish habitat will also be removed during trenching. Noise disturbances upstream and downstream of the site will deter fish that may otherwise inhabit the area. These disturbances are temporary and are not expected to significantly affect fisheries resources.

Sediment loads will be temporarily increased downstream during open-cut stream crossings. These increased loads may temporarily affect the more sensitive fish eggs, fish fry, and invertebrates inhabiting the downstream area. However, the suspended sediment levels will quickly attenuate both over time and distance and will not adversely affect resident fish populations or permanently alter existing habitat.

The project is not anticipated to have adverse impacts on Federally and state-listed species or on sensitive species within the Chippewa National Forest. Lakehead will continue to consult with the MDNR, USFWS, and USFS regarding these species. If any of the species are identified in the construction right-of-way during the surveys, Lakehead will develop mitigation plans to avoid and minimize impacts on the potentially affected species.

Lakehead will also continue to consult with the MDNR, USFWS, and USFS to determine the exact location of the bald eagle nesting sites. If these sites are located in close proximity to the construction area, Lakehead will develop mitigation plans to avoid adverse effects on the bald eagle. Possible mitigation may include conducting surveys before construction to determine if any bald eagle nests within 1/4 mile of the pipeline route are active and/or avoiding construction within 1/4 mile of active nests during the bald eagle's nesting season between February 15 and July 15.

Water Resources – Groundwater

Construction of the pipeline project is not expected to have long-term impacts on groundwater resources. Ground disturbance associated with pipeline construction is primarily limited to the upper 10 feet, which is above the water table of most of the regional aquifers. Construction activities such as trenching, backfilling, and temporary dewatering that encounter shallow surficial aquifers may result in minor short-term fluctuations in groundwater levels within the aquifer. Once the construction activity is complete, the groundwater levels typically recover in a short period of time. No long-term dewatering will occur as the result of this project.

The introduction of contaminants to groundwater due to accidental spills of construction related chemicals, fuels, or hydraulic fluid can adversely affect groundwater quality, most notably near shallow water wells. Spill-related impacts from pipeline construction are primarily associated with fuel storage, equipment refueling, and equipment maintenance. Lakehead has prepared a Spill Prevention, Containment, and Control Plan (Spill Plan) that specifies measures that will be implemented to prevent accidental releases of fuels and other hazardous substances. The Spill Plan also describes response, containment, and cleanup procedures. By implementing the protective measures set forth in the Spill Plan, contamination due to construction activities is not anticipated.

Accidental leaks from the pipeline system during operations can also potentially affect groundwater. As part of pipeline operation, which is regulated by the U.S. Department of Transportation – Office of Pipeline Safety, Lakehead has an ongoing inspection program to monitor the integrity of the pipeline system. Monitoring activities include regular inspection of the cathodic protection system, which addresses the possible corrosion potential for a steel pipe installed below the ground surface. In addition, Lakehead utilizes computerized inspection tools that travel through the inside of the pipeline to check pipe integrity. Lakehead also performs regular aerial flyovers to inspect the pipeline right-of-way. As required by federal law, Lakehead has prepared an Emergency Response Plan which has been reviewed and approved by the Department of Transportation – Office of Pipeline Safety to address pre-planning, equipment staging, notifications, and leak containment procedures to be implemented in the event of a pipeline leak.

Surface Water Resources

All of the waterbodies except the Mississippi River, the Prairie River, and possibly the two designated trout streams (Clearwater River and associated tributary) and the Cass Lake Channel will be crossed using conventional open-cut methods. Dependent upon engineering evaluations, Lakehead anticipates using the

directional drill method to cross the Mississippi River, Prairie River, and possibly the Clearwater River and tributary and Cass Lake Channel.

In-stream trenching associated with pipeline construction across waterbodies can temporarily increase the sediment load in the waterbody. Sustained periods of exposure to high levels of suspended solids have been shown to cause fish egg and fry mortality and other deleterious impacts on fisheries and other aquatic resources. Surface runoff and erosion from the cleared right-of-way can also increase in-stream sedimentation during construction resulting in the shallowing of pools and a reduction of the quality of fish spawning beds and benthic substrate.

Long-term impacts on water quality can result from alteration of the stream banks and removal of riparian vegetation. If not stabilized and revegetated properly, soil erosion associated with surface runoff and stream bank sloughing can result in the deposition of large amounts of sediments in the waterbodies long after construction is completed. Sediments deposited in interstitial openings in streambed gravels can result in fish egg mortality and damaged spawning habitat. Removal of riparian vegetation can also lead to increased light penetration into the waterbody, causing increased water temperature that could potentially be detrimental to coldwater fisheries.

Typical pipeline construction in most wetlands will be similar to construction in uplands and will consist of clearing, trenching, dewatering, installation, backfilling, cleanup, and revegetation. However, due to the unstable nature of some wetland soils, construction activities may differ somewhat from standard upland procedures. Construction activities will be minimized in wetlands and/or special construction techniques will be used to minimize the disturbance to vegetation and soils and to maintain wetland hydrology. Where a wetland cannot support construction equipment, construction activities will be conducted from timber construction mats or by the use of low ground pressure equipment, thus limiting disturbance to the wetland.

Wetlands will not be permanently filled or drained as a result of constructing the project. Construction will result in primarily temporary impacts and, in a few situations, minor changes in plant species composition. The temporary impacts include loss of wetland vegetation and wildlife habitat as a result of clearing and other construction activities; soil disturbance associated with clearing, trenching, and equipment traffic; and increases in turbidity and alterations of hydrology as the result of trenching, dewatering, and soil stockpiling activities. These impacts will be temporary because wetland hydrology will be restored, the hydric topsoils will be replaced, and the wetlands will be allowed to revegetate naturally.

After the pipeline is constructed and placed into operation, there will be a long-term but incremental impact to a small amount of forested wetland as the result of vegetation maintenance practices. Larger-diameter trees will be removed on a routine basis from forested wetlands along the corridor to facilitate post-construction pedestrian and aerial inspections of the pipeline and right-of-way. Lakehead anticipates that an additional 20 feet width of right-of-way will be maintained relatively free of larger-diameter trees along the existing right-of-way. This additional maintained right-of-way will result in the permanent conversion of approximately 26.8 acres of forested wetland to emergent or scrub-shrub wetland.

Cultural Resources

Lakehead will design the pipeline project to have no adverse effects on cultural resources. Lakehead will consult with the COE, SHPO, and the Native American tribes on measures to avoid or mitigate adverse impacts on significant cultural resources. These measures will include either routing the pipeline around identified archaeological sites or conducting data recovery at the site prior to pipeline construction. Lakehead will also develop and implement an unanticipated discoveries plan in the event that a cultural resource site is found during construction activities.

Federal, State, and County Recreational Areas

Because the project will parallel existing Lakehead pipelines, no new encumbrances or significant impacts to recreational land are anticipated. The pipeline project will have only minor and temporary impacts on Federal, state, and local recreational areas crossed in Minnesota. Impacts on recreational use of public lands will be primarily limited to temporary inconveniences and localized disturbances, including noise, dust, and visual intrusions that normally occur with construction activities. There will be no long-term impact to recreational activities within the designated recreational areas as the result of construction and operation of the pipeline. As discussed previously, some permanent tree clearing will be required along the pipeline corridor for maintenance purposes, which could have limited aesthetic impacts on the national, state, and county forests in the project area.

Construction of the pipeline could temporarily restrict public use of the construction right-of-way and temporarily affect trail accessibility. Potential impacts on recreational activities will be dependent on the timing of construction, the season in which the recreational activity occurs, and the construction method for crossing the recreational area. Public access to Federal, state, and county forest lands will be maintained to the greatest extent possible during construction. Short-term closures of some areas may be necessary during construction, due to limited access. After construction is completed, the public land will be restored to allow previous uses and recreational activities to continue as before construction.

Lakehead will consult with the USFS and MDNR on measures to avoid and minimize impacts on recreational activities in the National and state forests and on state trails. Federal and state permits required for crossing the Chippewa National Forest and state-owned forest land will specify mitigative measures for avoiding and minimizing both recreational and environmental impacts.

4415.0150 RIGHT-OF-WAY PROTECTION AND RESTORATION MEASURES

Lakehead has developed standardized erosion control and restoration measures to minimize and mitigate potentially adverse environmental effects resulting from right-of-way preparation, construction, operation, and maintenance of the proposed pipeline. These measures are described in Lakehead's Environmental Mitigation Plan (EMP). Lakehead also has developed a Spill Prevention, Containment and Control Plan (Spill Plan) that describes planning, prevention and control measures to minimize impacts of construction-related spills. The EMP and Spill Plan are comprehensive, controlling documents that will be included in contract specifications.

Lakehead will comply with applicable Federal, state, and local rules and regulations and take all appropriate precautions to protect against pollution of the environment. In addition, Lakehead will retain third-party Environmental Inspectors to verify that environmental protection measures, environmental permit conditions, and other environmental specifications are implemented appropriately by the contractor during construction of the proposed facilities.

Lakehead will negotiate easements with affected landowners along the proposed route, including Federal, state, and local land managing agencies. These easements may specify site-specific protection and restoration measures. In addition, easement negotiations will include compensation for loss of crops and merchantable timber and for damages to Landowner's property.

Subpart 1. Protection.

The application must describe what measures will be taken to protect the right-of-way or mitigate the adverse impacts of right-of-way preparation, pipeline construction, and operation and maintenance on the human and natural environment.

Measures that will be taken to protect the right-of-way or mitigate the adverse impacts of right-of-way preparation, pipeline construction, and operation and maintenance on the human and natural environment are described in detail in the EMP. A summary of the primary protection measures to be used during construction of the pipeline project are provided below:

- Topsoil along the trenchline and in spoil areas will be stripped and segregated in cropland, hayland, pasture, golf courses, residential areas, and other areas requested by the Landowner.
- Topsoil along the trenchline will also be stripped and segregated in unsaturated wetlands to preserve natural sources of seed and rootstock.
- Temporary erosion control measures, including slope breakers, silt fences, and staked straw bales, will be installed and maintained at appropriate locations to minimize erosion and sedimentation.
- Trench breakers will be installed in sloped upland areas, as needed, to prevent subsurface erosion along the pipe and will be installed in wetlands, as needed to maintain original wetland hydrology.
- All reasonable measures will be taken to minimize compaction of cultivated fields, including restricting heavy equipment traffic on susceptible soils during

wet weather. If compaction does occur in these areas, a chisel plow or deep tillage device will be used to loosen compacted soils.

- Discharge from trench dewatering will be directed to vegetated upland areas and prevented from flowing to waterbodies and wetlands to the extent practicable.
- Major highways and most paved secondary roads will be crossed using boring equipment to minimize disruption of traffic and to avoid disturbance of the road surface.
- The two large rivers (Mississippi and Prairie Rivers), and possibly the designated trout streams (Clearwater River and associated tributary) and the Cass Lake Channel will be crossed using directional drilling equipment to facilitate the waterbody crossing and to minimize environmental impacts.
- The duration of construction activities within waterbodies will be limited and construction equipment within waterbodies will be limited to the area necessary to complete the crossing.
- Hazardous materials, chemicals, fuels, and lubricating oils will not be stored within 100 feet of waterbodies and wetlands.
- Measures will be implemented in accordance with the Spill Plan to prevent accidental releases of fuels and other hazardous substances.
- Attempts will be made to refuel all construction equipment in an upland area at least 100 feet from a wetland boundary. Where conditions require that construction equipment (e.g., pontoon-mounted backhoes, trench dewatering pumps) be refueled in a wetland or within 100 feet of any wetland boundary, these activities will be in accordance with Lakehead's Spill Plan, and in consultation with the Environmental Inspector.
- Temporary bridges will be used where necessary to transport construction equipment across perennial streams and rivers.
- Construction mats, corduroy roads, or low ground pressure equipment will be used in wetlands, as needed, to facilitate equipment access and pipeline installation and to minimize disturbance of the wetland.
- All reasonable measures will be taken to minimize construction-related dust and noise in residential areas.

Subpart 2. Restoration.

The applicant must describe what measures will be taken to restore the right-of-way and other areas adversely affected by construction of the pipeline.

Measures that will be taken to restore the right-of-way and other areas adversely affected by construction of the pipeline are described in detail in the EMP and the Environmental Impact and Restoration Analysis. A summary of the primary restoration measures to be used during construction of the pipeline project are provided below:

- **Construction-related debris and material which is not an integral part of the pipeline (including litter generated by the contractors) will be removed during final cleanup and grading.**
- **Disturbed areas will be restored to preconstruction contours to the extent practicable.**
- **Topsoil will be replaced in those areas where it was stripped and segregated.**

- Disturbed areas except cultivated fields will be revegetated in accordance with a revegetation plan developed in consultation with the Natural Resources Conservation Service and Federal and state land managing agencies or as directed by the Landowner.
- Permanent berms (diversion dikes or slope breakers) will be installed at appropriate locations along disturbed slopes.
- Soil conservation practices (e.g., terraces, grass waterways, shelterbelts, etc.) damaged during construction will be repaired or replaced.
- Stream banks will be permanently stabilized with erosion control fabric and permanent seeding or with rock riprap and/or as directed by Federal and state permits.
- Compacted soils in cultivated fields will be tilled with a chisel plow or deep tillage device.
- Drain tiles damaged during construction will be repaired or replaced.
- Fences and gates removed or damaged during construction will be repaired or replaced.
- Public and private roads damaged during construction will be repaired.

4415.0160 OPERATION AND MAINTENANCE

Pipeline operations and maintenance are assumed to be in compliance with all applicable state and federal rules or regulations, unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the applicant must provide a general description of the anticipated operation and maintenance practices planned for the proposed pipeline.

The Company is committed to operating and maintaining the pipeline system in a manner that protects the environment and insures the safety of the public, contractors and employees. As an interstate crude oil and natural gas liquid pipeline, the Company's design, construction, maintenance and operation functions are regulated by U.S. Department of Transportation in Title 49 CFR Part 195 - Transportation of Hazardous Liquids by Pipeline.

The federal agency charged with enforcement of Part 195 is the U.S. Department of Transportation, Office of Pipeline Safety (FedOPS). In 1991, the Minnesota Office of Pipeline Safety (MnOPS) was designated as inspectors on behalf of the Federal Office of Pipeline Safety. Findings, reports and recommendations from MnOPS inspectors are referred to the FedOPS for review and action.

In order to establish standards and guidelines for Company personnel, as well as to comply with Part 195 and other government regulations, the Company has developed very comprehensive written procedures for the operation and maintenance of the pipeline. Company procedures and activities meet and often exceed these government requirements. The following paragraphs provide a very general overview of operation and maintenance practices.

1) Pipeline Operation and Control

The Lakehead pipeline control center is attended by trained pipeline operators 24 hours a day. A computerized pipeline control system allows these operators to remotely monitor and control the pipeline and related facilities. The Control Centers also serve as emergency centers to receive calls from employees, landowners, the public or public officials reporting unusual conditions or pipeline failures.

The computerized pipeline control system has been designed to control the pipeline within pre-established minimum and maximum operating pressures. Both the computer system and operating practices include procedures for abnormal operating conditions, including emergency shutdown and isolation of the pipeline and notification procedures in the event of suspected emergencies.

2) Communications Capabilities

Land-lines and satellite communications are used to exchange the necessary computerized data for pipeline monitoring and control. The Company maintains a UHF radio system, supplemented by cellular phones as needed, to facilitate personnel communications during operation, maintenance or emergency activities.

3) Protection of the Pipe from Damage

The proposed new pipe will be buried to a minimum depth of 36-inches to prevent damage to the pipeline from normal use of the land. The Company has an aggressive program in educating excavators and the public about the presence of the pipeline and preventing damage to the pipeline from excavating equipment. The Company has joined and supports the Gopher State Excavators One-Call system and other one-call systems in the states that have one.

The pipeline is protected from corrosion in a number of ways. Pipelines are covered with a protective coating and all buried or submerged metallic structures are under a cathodic protection system.

4) Inspections

The Company conducts routine inspections of the pipeline and facilities to determine that the system is operating properly.

Each calendar year (not to exceed 15 month interval), the cathodic protection system is monitored by taking pipe/structure-to-soil and line current (where possible) readings. Additionally, each rectifier and anode groundbed used to impose cathodic protection on the pipeline is inspected to ensure proper operation. Repairs and adjustments to the cathodic protection system are either made during the annual survey or during later maintenance activities. At least six times per year, each critical cathodic protection interference bond to structures (pipelines) is inspected and corrective measures taken if needed.

The pipeline route is patrolled by air at least 26 times per year to inspect the surface conditions of land on or adjacent to the pipeline right-of-way. If weather and other conditions permit, this aerial inspection is conducted weekly. Line-walking inspection of the right-of-way is sometimes used to supplement aerial inspections in congested areas. This inspection also assists in identifying unknown construction or other unsafe activity on the pipeline right-of-way.

Isolating valves are checked at least twice per year to ensure proper operation. In the event of a leak, it is important for valves to close properly to isolate the section of pipeline and minimize the amount of petroleum that may escape. Other components of the pipeline, such as tanks and pump stations are also routinely inspected.

In the 1970's, the Company began a program of periodically inspecting the pipeline internally with electronic inspection tools called "smart pigs". These devices travel through the inside of the pipeline and either mechanically, ultrasonically or magnetically examine the condition of the pipe by on-board computers. Results of the inspection are then analyzed, the pipe inspected to verify preliminary findings, (dents, gouges or corrosion) and then repaired as required.

All overpressure safety devices capable of limiting, regulating, controlling and/or relieving operating pressures are inspected and tested to ensure that the device is functioning properly, is in good mechanical condition, and is adequate from the stand point of capacity and reliability of operation for the service in which it is used.

Periodically, government officials inspect the Company's compliance with applicable government regulations. Inspections of the Company's written procedures, records and facilities have been conducted by Federal Office of Pipeline Safety and Minnesota Office of Pipeline Safety agents on several occasions in the last four years. In addition, Minnesota Office of Pipeline Safety inspectors have conducted frequent field inspections and observations of the Company's maintenance activities during the last two years.

5) Maintenance

Many other maintenance activities are performed on the pipeline and related facilities. The Company has a comprehensive preventative maintenance program that meets and, in many cases exceeds, minimum federal safety standards set forth in 49 CFR Part 195. When facilities are added or replaced, there are comprehensive standards for their design and installation in both Company procedure manuals and contract specifications. Repair pipe is pre-tested and other components used to repair the pipeline meet national standards and regulatory requirements. Welding procedures have been tested to ensure they are sound. Other procedures, such as movement of the pipe, coating repair, corrosion control and tank maintenance are all guided by regulations, industry standards and company written procedures which have been reviewed by the Federal and Minnesota Office of Pipeline Safety inspectors.

6) Training of Personnel

The Company has established a comprehensive orientation, technical, safety, emergency and on-the-job training program. As personnel progress in pipeline operation and maintenance positions, they receive hundreds of hours of formal and on-the-job training. Demonstrations of competence are shown through review of job performance, periodic pipeline control system simulators, emergency exercises, welding certification tests and other functions required to continue safe pipeline operation and maintenance.

7) Public Awareness Program

The Company conducts an annual public awareness program to make sure Landowners, the general public, contractors, and emergency units of government are aware of how to recognize and avoid or respond to a pipeline emergency. The Company has also been active at the local, county and state level in emergency response planning and joint training/exercises to prepare all potential responders to deal with emergencies.

The pipeline route is marked at all public road and railway crossings to increase the public's awareness of the underground pipeline. Additional markings are posted at valves, other pipeline facilities and stations along the pipeline route.

8) Emergency Preparedness

The Company's operating and maintenance practices are aimed at preventing emergencies on the pipeline. However, it is imperative that the Company be prepared to respond to an emergency should one occur. In addition to preventative activities described above, the Company's emergency response program includes pre-planning, equipment staging, notifications, emergency and leak containment procedures.

The Company has submitted its emergency response plan for approval, as mandated by federal law, to the Department of Transportation, Research and Special Programs Administration (RSPA). The plan, which was subsequently approved by RSPA, demonstrates Lakehead's response capabilities in accordance with the rule set forth in 49 CFR Part 194. A copy of the plan has also been submitted to the Minnesota Pollution Control Agency.

The Company's plan is also influenced by requirements set forth in the Occupational Safety and Health Administration's (OSHA) final rules on Hazardous Waste Operations and Emergency Response. The plan addresses compliance with public and employee safety issues including implementation of the Incident Command System, training of response personnel, personal protection requirements, site control procedures and decontamination.

The emergency plan is maintained at all manned Company facilities. In addition, Company employees are provided a copy of an Emergency Response Directory which provides checklists, summaries from the Plan, internal and external contacts and notification/reporting procedures.

Customized United States Geological Survey quadrangle maps depicting the entire pipeline system and surrounding environment serve an integral role in the emergency planning process. These maps also provide the framework to evaluate areas according to public and environmental sensitivities, and where appropriate, develop site-specific plans.

As mandated by federal law, the Company is required to have resources in place to respond, to the maximum extent practical, to a worst case discharge from the pipeline system. The Company utilizes ten Pipe Line Maintenance (PLM) crews, strategically located along the pipeline system. Each PLM employee is trained and equipped to respond to an emergency. Each maintenance facility has mobile response units and heavy equipment at their disposal, which are in addition to numerous locations where pre-staged containment and recovery equipment is maintained and available.

The Company has pre-defined response contractors to supplement Company owned resources. Additionally, the Company is active in several industry and government co-operatives and mutual aid groups to facilitate emergency response.

9) Maps and Records

Maps and records are maintained and updated to indicate the location and identification of all primary components of the pipeline system. Route sheets and other system maps are provided to public agencies to assist in identifying the presence of the pipeline and/or in preparing for potential emergencies.

4415.0165 LIST OF GOVERNMENT AGENCIES AND PERMITS

Each application must contain a list of all the known federal, state, and local agencies or authorities and titles of the permits they issue that are required for the proposed pipeline and associated facilities.

Schedule 4415.0165-A provides a list of the responsible government agencies or authorities and the titles of permits/approvals required for the proposed pipeline project in Minnesota.

Lakehead Pipe Line
EQB Application August 2001

Schedule 4415.0165-A

LIST OF GOVERNMENT AUTHORITIES AND TITLES OF PERMITS/APPROVALS
(Minnesota Portion of Project Only)

Name of Agency	Title of Permit/Approval	Date of Application^a	Date of Decision^b	Status
Federal				
United States Army Corps of Engineers	Section 10 Permit (navigable waters)	April 2001	fall 2001	On-going
	Section 404 Permit (waters of the U.S., including wetlands)	April 2001	fall 2001	On-going
United States Fish and Wildlife Service	Section 7 Consultation (Federal endangered species)	April 2001	Oct 2000	Complete
United States Environmental Protection Agency	NPDES Discharge Permit for hydrostatic test water (within the Leech Lake and Fond Du Lac Reservations)	September 2001	March 2003	To be submitted
	NPDES Discharge Permit for trench dewatering (within the Leech Lake and Fond Du Lac Reservations)	August 2001	January 2002	To be submitted
	NPDES Discharge Permit for construction stormwater (within the Leech Lake and Fond Du Lac Reservations)	October 2001	December 2001	To be submitted
	Section 401 Water Quality Certification (within the Leech Lake and Fond Du Lac Reservations)	July 2001	November 2001	To be submitted
United States Forest Service	Special Use Permit (Chippewa National Forest)	May 2000	December 2001	On-going
State – Minnesota				
Minnesota Environmental Quality Board	Partial Exemption and Routing Permit ^c	July 2001	December 2001	To be submitted
Minnesota Public Utilities Commission	Certificate of Need	July 2001	December 2001	To be submitted
Minnesota Department of Natural Resources	License to Cross Public Waters	July 2001	November 2001	On-going
	License to Cross Public Lands	August 2001	December 2001	To be submitted

**Lakehead Pipe Line
EQB Application August 2001**

Name of Agency	Title of Permit/Approval	Date of Application ^a	Date of Decision ^b	Status
	Water Appropriation Permit (hydrostatic test water)	October 2001	January 2002	To be submitted
	Water Appropriation Permit (trench dewatering)	October 2001	winter 2002	To be submitted
	State Endangered Species Consultation	June 2000	December 2001	On-going
Minnesota Pollution Control Agency	NPDES Discharge Permit (hydrostatic test water)	September 2001	March 2003	To be submitted
	NPDES Discharge Permit (Trench dewatering)	October 2001	December 2001	To be submitted
	NPDES Discharge Permit (construction stormwater)	October 2001	December 2001	To be submitted
	Section 401 Water Quality Certification	June 2001	October 2001	On-going
Minnesota Historical Society	Section 106 Consultation	July 2000	November 2001	On-going
Minnesota Department of Transportation	Road Crossing Permit	August 2001	December 2001	To be submitted
Local – Minnesota				
Clearwater, Beltrami, Cass, Itasca, St. Louis, and Carlton Counties	Road Crossing Permit	August 2001	December 2001	To be submitted
	Conditional Use/Zoning Permits	August 2001	December 2001	To be submitted
	Minnesota Wetland Conservation Act Exemption	August 2001	December 2001	To be submitted
Red Lake Watershed District	Watershed District Permit	August 2001	December 2001	To be submitted
Bemidji & Other Cities	Land managing consultation	August 2001	December 2001	To be submitted
Mississippi River Headwaters Board	Land managing consultation	August 2001	December 2001	To be submitted
Other – Minnesota				
Leech Lake Reservation	Land managing consultation	March 1999	December 2001	On-going
Fond Du Lac Reservation	Land managing consultation	March 1999	December 2001	On-going

^a Anticipated dates for submission.

^b Projected dates of action.

^c The following governmental agencies will be provided notice and/or have an opportunity to take part in proceedings before the Minnesota Environmental Quality Board:

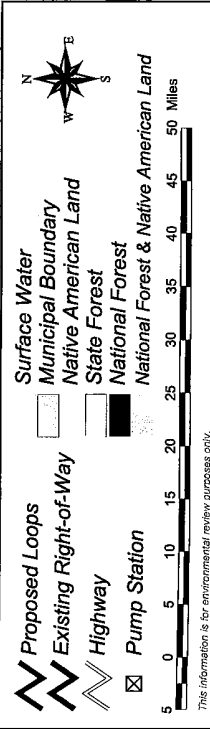
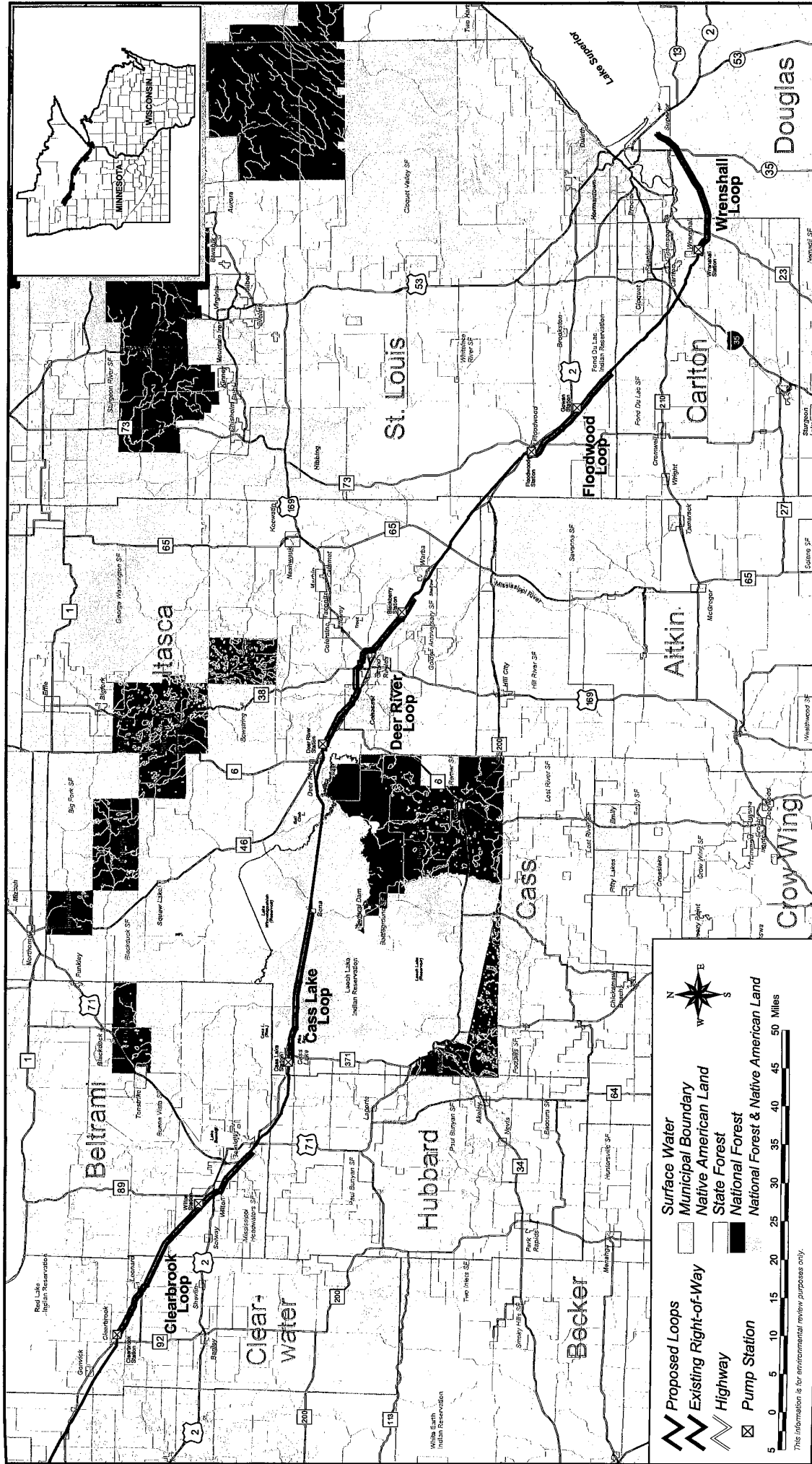
Lakehead Pipe Line
EQB Application August 2001

Governor's Representative
Department of Agriculture
Department of Health
Department of Natural Resources
Department of Public Service
Department of Transportation
United States Fish and Wildlife Service

Board of Water and Soil Resources
Minnesota Planning Office
Minnesota State Archaeologist
Office of Waste Management
Pollution Control Agency
Citizen Members
Minnesota Historical Society

Regional Development Commissions
Soil and Water Conservation Districts
Watershed Districts
Auditor of Each County
Clerk of Each Township and Incorporated Town

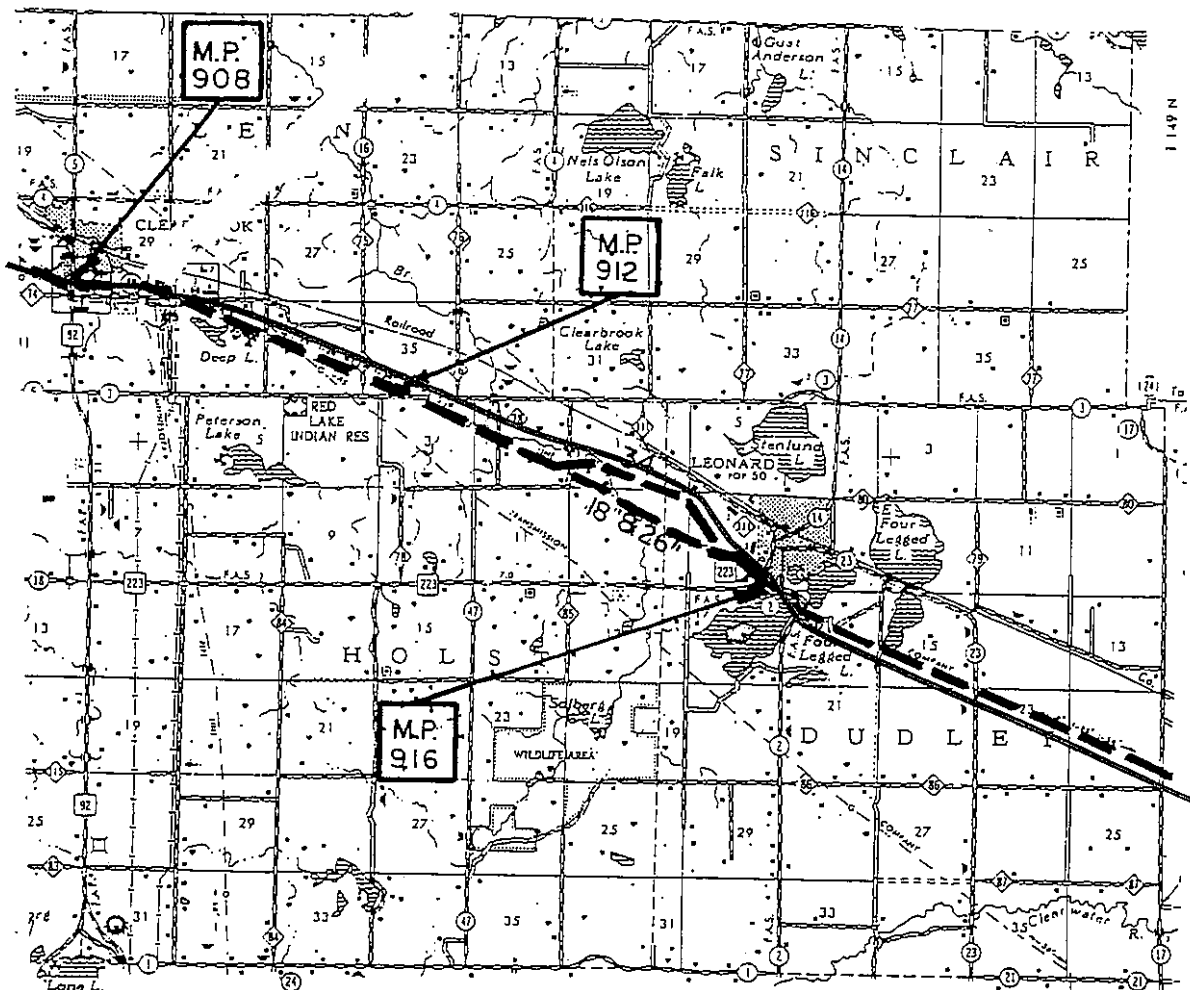
These agencies, affected landowners and the general public will have an opportunity to comment on the partial exemption application and routing permit for the proposed facility.



LPL
Lakehead
Pipe Line

Map A
Lakehead Pipe Line Company
Terrace Expansion Project - Phase III
Proposed Pipeline

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SCALE: 1:750,000
DRAWN BY: JRF/ANNERY
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LEGEND

ROAD AND ROADWAY FEATURES

TRAIL (HIGHWAY)
PROPOSED ROAD
UNIMPROVED ROAD
GRAVEL AND GRAVEL ROAD	.....
SOIL SURFACE ROAD	.....
GRAVEL OR STONE ROAD	.....
PAVED ROAD	.....
PAVED HIGHWAY	.....
REPAIRS OF DESIGNATED ROAD	.....
TRUNK HIGHWAY UNDER CONSTRUCTION	.....
TRUNK HIGHWAY TRAFFIC BEING ROUTED THROUGH CONSTRUCTION ZONE	.....
ROADS IN UNINCORPORATED COMPACTS	.....
SECTIONS OF LOCAL ROADS (NOT F.A.S. WITHIN MUNICIPALITIES AND TOWNSHIP ROADS)	.....
PORTS BETWEEN WHICH DISTANCES ARE MEASURED INDICATED THERE	.....

ROAD SYSTEM DESIGNATIONS

INTERSTATE TRUNK HIGHWAY	.....
U.S. NUMBERED TRUNK HIGHWAY	.....
STATE NUMBERED TRUNK HIGHWAY	.....
COUNTY STATE AID HIGHWAY	.....
COUNTY ROAD	.....



PROPOSED 36" LINE

EXISTING 48" LINE

GENERAL HIGHWAY MAP CLEARWATER COUNTY MINNESOTA

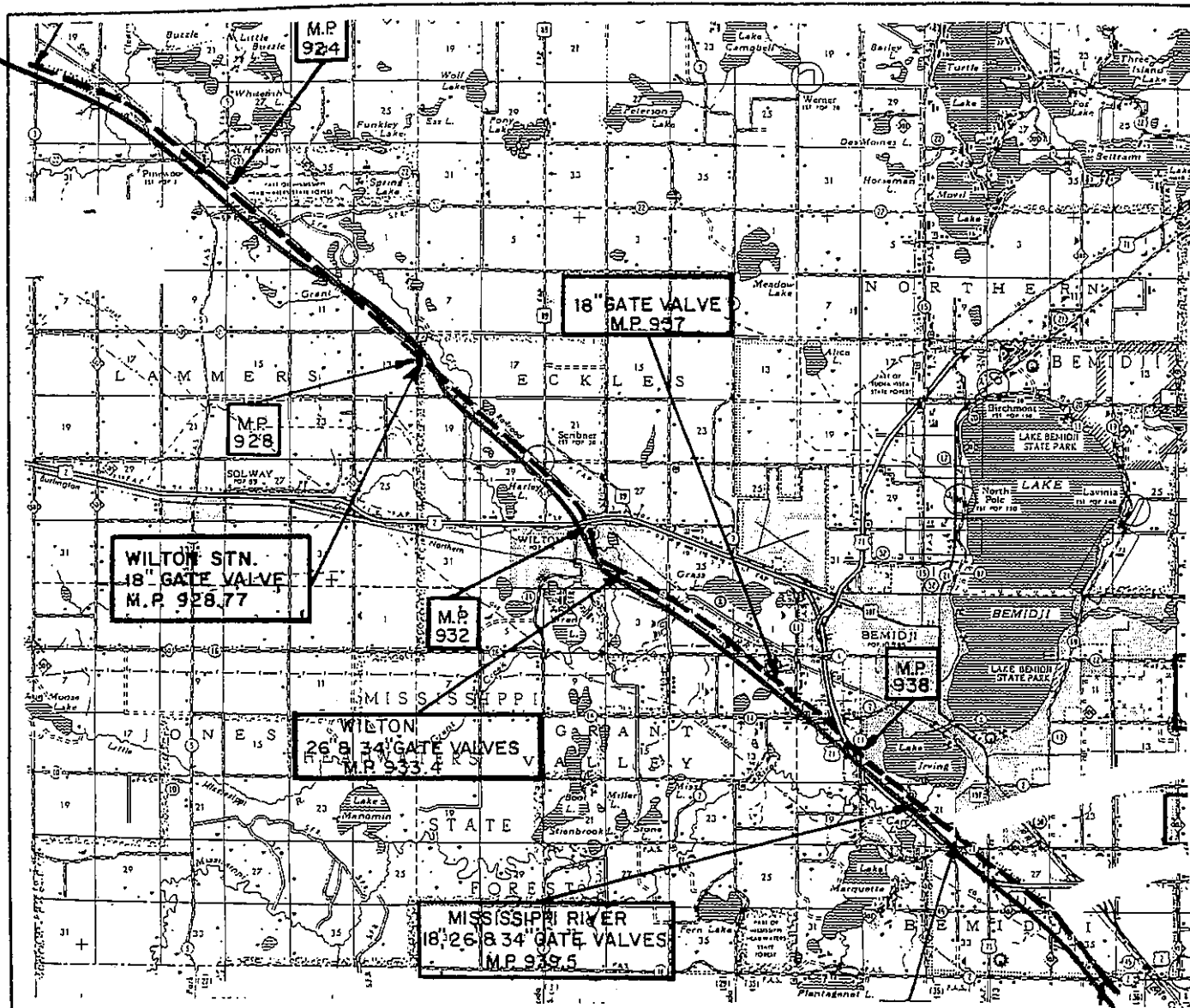
PREPARED BY THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
TECHNICAL SERVICES DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE OF STATUTE MILES

LAKEHEAD PIPE LINE COMPANY, L.P.
DULUTH, MINNESOTA

DATE:

SHEET



LEGEND

ROAD AND ROADWAY FEATURES	
TRAIL (DASHED)	-----
PROPOSED ROAD	=====
EXISTING ROAD	=====
UNIMPROVED ROAD	=====
GRAVEL AND GRAVEL ROAD	=====
GRAVEL SURFACE ROAD	=====
GRAVEL OF STONE ROAD	=====
NUMEROUS ROADS	=====
PAVED ROAD	=====
DRYER HIGHWAYS	=====
STRAIGHT OR SLOPED ROAD	=====
TRUCK HIGHWAY UNDER CONSTRUCTION	=====
TRUCK HIGHWAY TRAFFIC BEING MOVED THROUGH CONSTRUCTION (ONE ROAD IN UNINCORPORATED COMPACTS)	=====
EXTENSIONS OF LOCAL ROADS (NOT FALL WITHIN MUNICIPALITIES AND HIGHWAY ROADS)	=====
ROADS WHICH INDICATE DISTANCES	=====
AND MEASURES INDICATED THERE	=====
ROAD SYSTEM DESIGNATIONS	
INTERSTATE TRUNK HIGHWAY	=====
U.S. NUMBERED TRUNK HIGHWAY	=====
STATE NUMBERED TRUNK HIGHWAY	=====
COUNTY STATE AND HIGHWAY	=====
COUNTY ROAD	=====

PROPOSED 36" LINE

EXISTING 48" LINE

GENERAL HIGHWAY MAP BELTRAMI COUNTY MINNESOTA

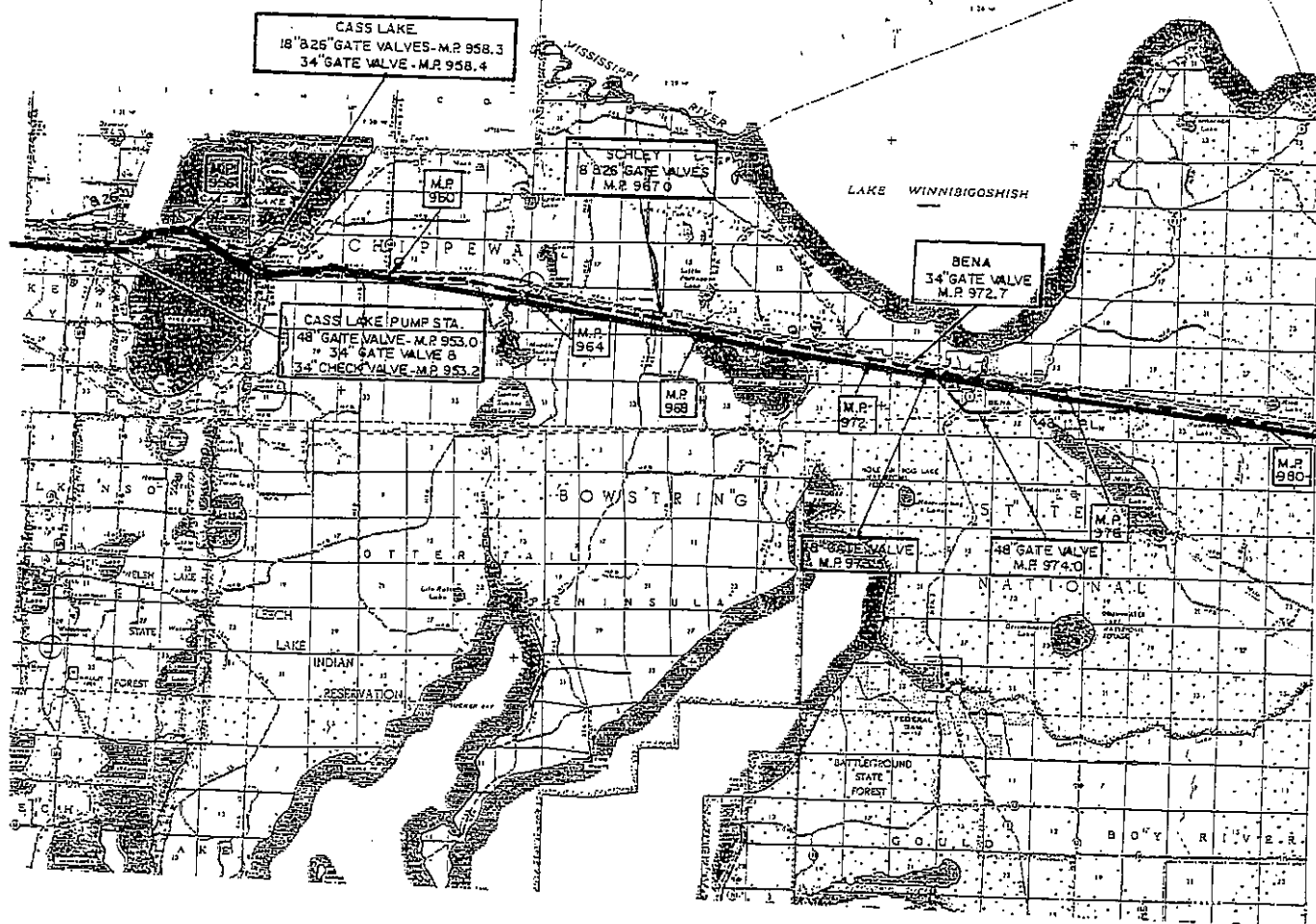
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FEDERAL HIGHWAY ADMINISTRATION

SCALE OF STATUTE MILES

LAKEHEAD PIPE LINE COMPANY, L.P.
DULUTH, MINNESOTA

DATE:

SHEET



LEGEND

ROAD AND ROADWAY FEATURES

- TRAIL, UNKNOWN.....
- PROPOSED ROAD.....
- UNIMPROVED ROAD.....
- GRAVEL AND GRAVEL ROAD.....
- GRAVEL SURFACE ROAD.....
- GRAVEL OF STONE ROAD.....
- BRICKMASS ROAD.....
- PAVED ROAD.....
- OPPOSED HIGHWAYS.....
- REMARKS OF DESIGNATED ROAD.....
- TRUNK HIGHWAY UNDER CONSTRUCTION.....
- TRUNK HIGHWAY TRAFFIC LANE ROUTES.....
- THROUGH CONSTRUCTION (ONE.....
- ROADS IN UNINCORPORATED COMPACTS.....
- EXTENSIONS OF LOCAL ROADS INTO.....
- LOCAL ROADS WITHIN COMPACTS AND.....
- POINTS BETWEEN WHICH DISTANCES.....
- ARE MEASURED INDICATES THAT.....

ROAD SYSTEM DESIGNATIONS

- INTERSTATE TRUNK HIGHWAY.....
- U.S. NUMBERED TRUNK HIGHWAY.....
- STATE NUMBERED TRUNK HIGHWAY.....
- COUNTY STATE AND HIGHWAY.....
- COUNTY ROAD.....



PROPOSED 36" LINE

EXISTING 48" LINE

GENERAL HIGHWAY MAP

CASS COUNTY MINNESOTA

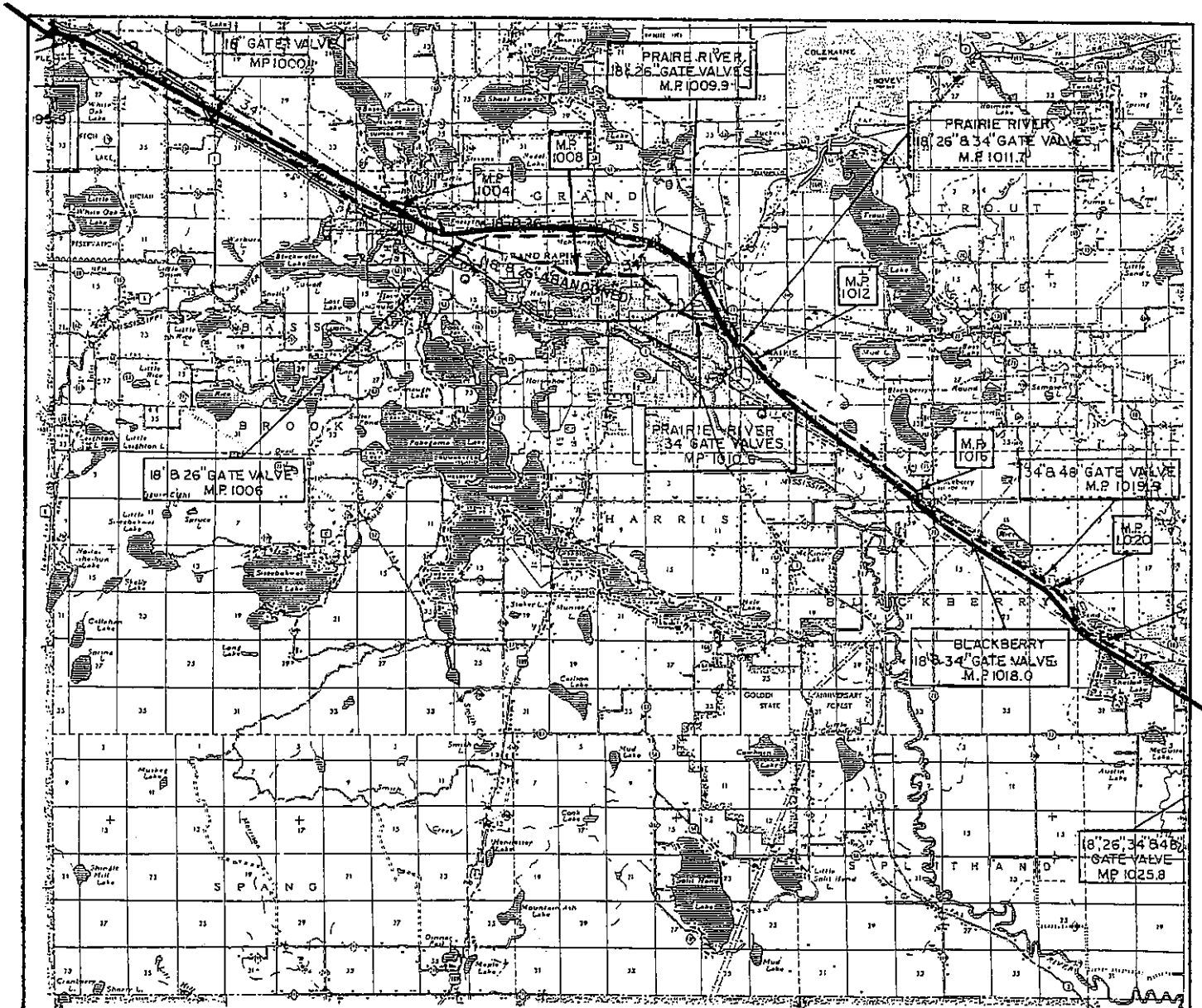
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IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE BY STATUTE MILES

LAKEHEAD PIPE LINE COMPANY, L.P.
DULUTH, MINNESOTA

DATE:

SHEET



LEGEND

- ROAD AND ROADWAY FEATURES**
- TRAIL (UNIMPROVED).....
 - PROPOSED ROAD.....
 - PRIMITIVE ROAD.....
 - UNIMPROVED ROAD.....
 - GRADED AND GRAVEL ROAD.....
 - SOFT SURFACE ROAD.....
 - GRAVEL OR STONE ROAD.....
 - MUNICIPAL ROAD.....
 - PAVED ROAD.....
 - DIVIDED HIGHWAYS.....
 - TERMINUS OF DESIGNATED ROAD.....
 - TRUNK HIGHWAY UNDER CONSTRUCTION.....
 - TRUNK HIGHWAY TRAFFIC BEING ROUTED THROUGH CONSTRUCTION ZONE.....
 - ROADS IN UNINCORPORATED TOWNSHIPS (EXTENSIONS OF LOCAL ROADS NOT F.A.S.) WITHIN MUNICIPALITIES AND FRONTAGE ROADS.....
 - POINTS BETWEEN WHICH DISTANCES ARE MEASURED INDICATED THUS.....
- ROAD SYSTEM DESIGNATIONS**
- INTERSTATE TRUNK HIGHWAY..... (35)
 - U.S. NUMBERED TRUNK HIGHWAY..... (65)
 - STATE NUMBERED TRUNK HIGHWAY..... (18)
 - COUNTY STATE AID HIGHWAY..... (5)
 - COUNTY ROAD..... (12)

PROPOSED 36" LINE

EXISTING 48" LINE

GENERAL HIGHWAY MAP ITASCA COUNTY MINNESOTA

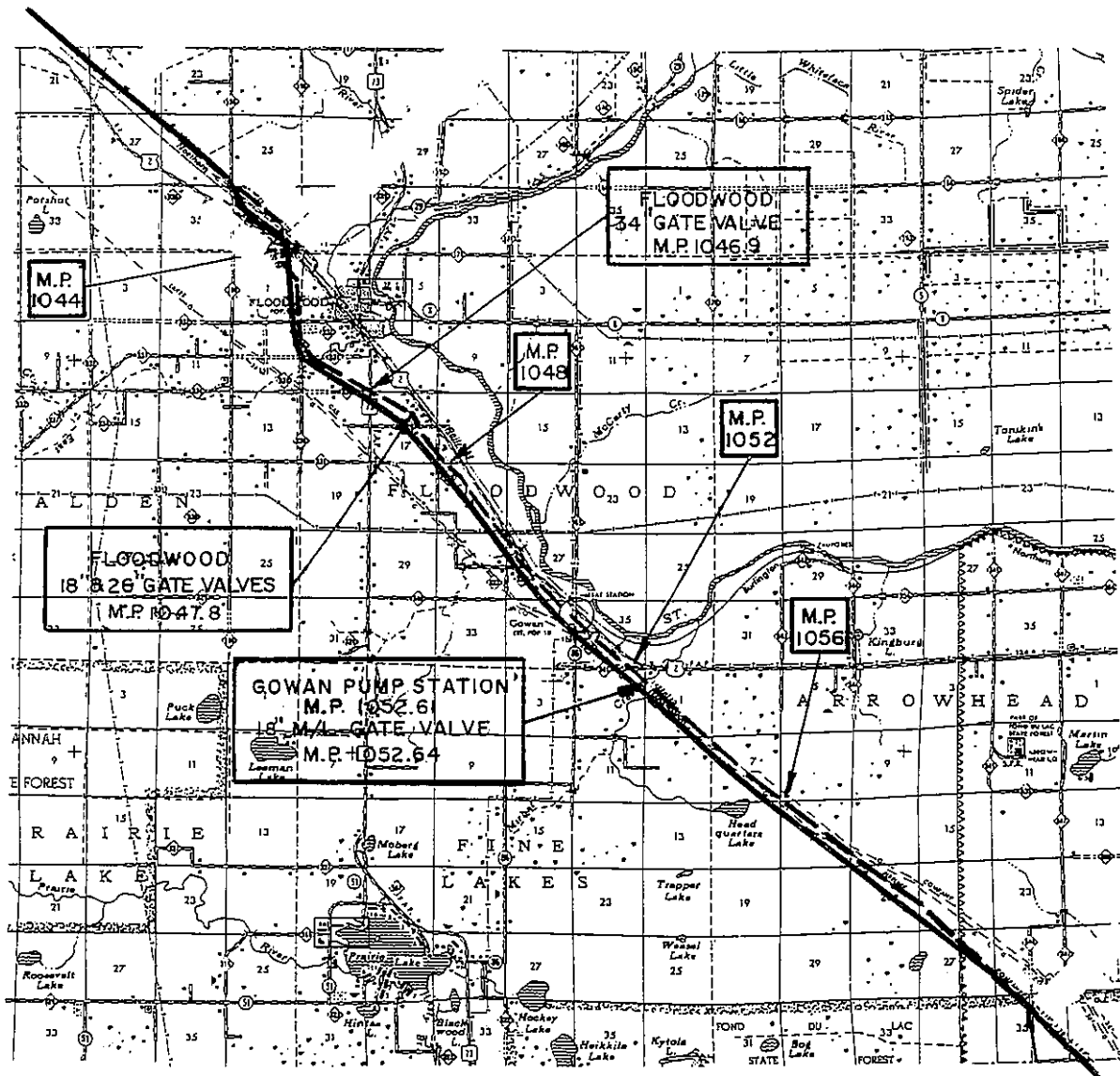
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IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE OF STATUTE MILES

LAKEHEAD PIPE LINE COMPANY, L.P.
DULUTH, MINNESOTA

DATE:

SHEET



LEGEND

ROAD AND ROADWAY FEATURES	
TRAIL (HATCHED)	.....
PROPOSED ROAD	.....
IMPROVED ROAD	.....
GRAVEL AND GRAVEL ROAD	.....
SOIL SURFACE ROAD	.....
GRAVEL OR STONE ROAD	.....
STONY ROAD	.....
PAVED ROAD	.....
OTHER HIGHWAYS	.....
TERMINUS OF DESIGNATED ROAD	.....
TRUNK HIGHWAY UNDER CONSTRUCTION	.....
TRUNK HIGHWAY TRAFFIC BEING ROUTED THROUGH CONSTRUCTION ZONE	.....
ROADS IN UNINCORPORATED CONTACTS (SECTIONS OF LOCAL ROADS NOT T.A.S.) WITHIN MUNICIPALITIES AND TOWNSHIP ROADS	.....
POINTS BETWEEN WHICH DISTANCES ARE MEASURED INDICATED TRAIL	.....
ROAD SYSTEM DESIGNATIONS	
INTERSTATE TRUNK HIGHWAY	.....
U.S. NUMBERED TRUNK HIGHWAY	.....
STATE NUMBERED TRUNK HIGHWAY	.....
COUNTY STATE AID HIGHWAY	.....
COUNTY ROAD	.....

PROPOSED 36" LINE

EXISTING 48" LINE

GENERAL HIGHWAY MAP ST. LOUIS COUNTY MINNESOTA

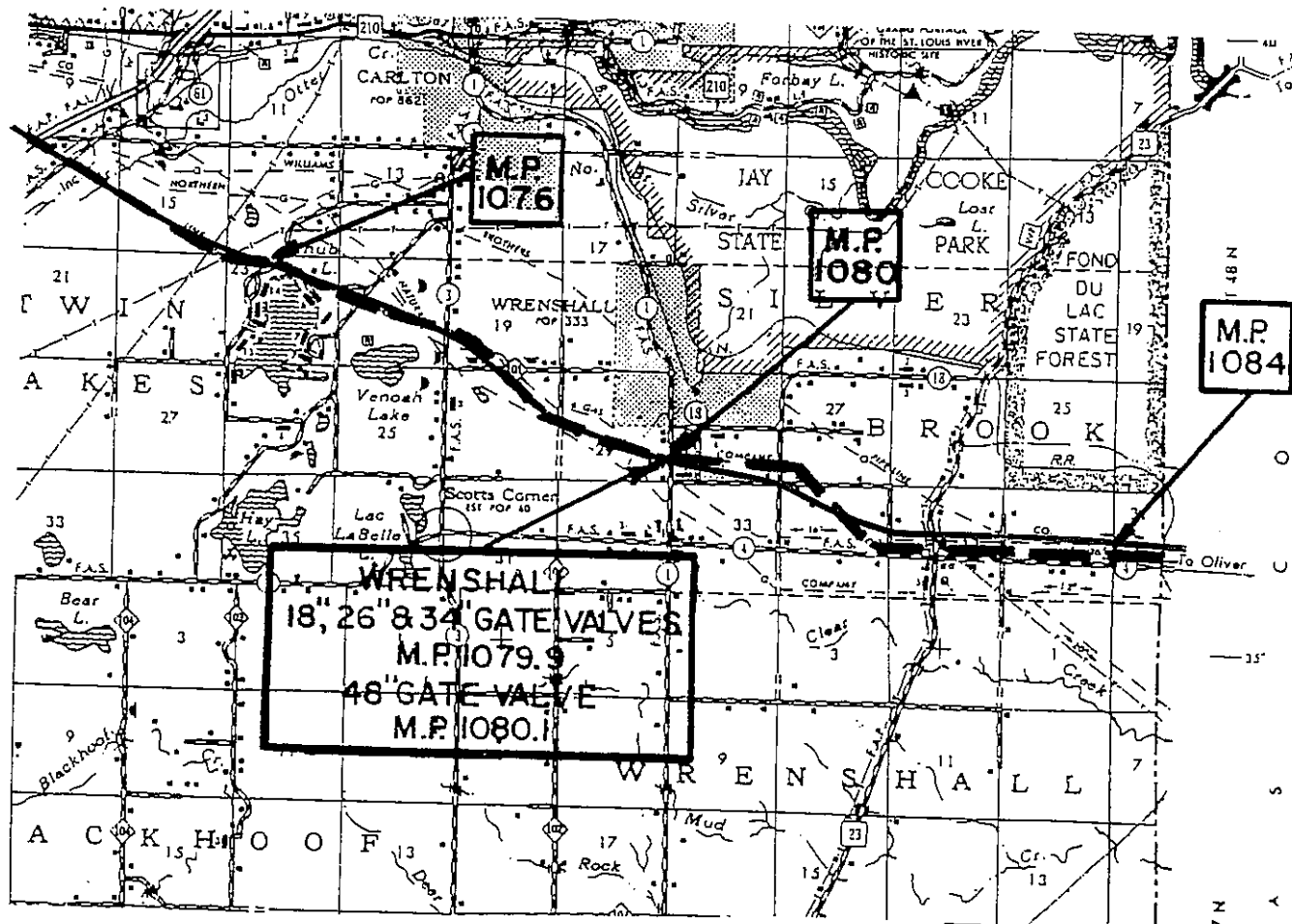
PREPARED BY THE
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TECHNICAL SERVICES DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE OF STATUTE MILES

LAKEHEAD PIPE LINE COMPANY, L.P.
DULUTH, MINNESOTA

DATE:

SHEET



PROPOSED 36" LINE

EXISTING 48" LINE

LEGEND

ROAD AND ROADWAY FEATURES

TRAIL (INDICATED)	.....
PROPOSED ROAD	.....
EXISTING ROAD	.....
UNIMPROVED ROAD	.....
GRAVEL AND GRAVEL ROAD	.....
ICE SURFACE ROAD	.....
GRAVEL OR STONE ROAD	.....
MURKIN ROAD	.....
PAVED ROAD	.....
DRIVE HIGHWAY	.....
TERMINUS OF DESIGNATED ROAD	.....
TRUNK HIGHWAY UNDER CONSTRUCTION	.....
TRUNK HIGHWAY TRAFFIC BEING ROUTED THROUGH CONSTRUCTION ZONE	.....
ROADS IN UNINCORPORATED COMPACTS	.....
EXTENSIONS OF LOCAL ROADS (NOT PAVED WITHIN HIGHWAY LIMITS AND PORTAGE ROADS)	.....
POINTS BETWEEN WHICH DISTANCES ARE MEASURED INDICATED THUS	.....

ROAD SYSTEM DESIGNATIONS

INTERSTATE TRUNK HIGHWAY	.....
U.S. NUMBERED TRUNK HIGHWAY	.....
STATE NUMBERED TRUNK HIGHWAY	.....
COUNTY STATE AND HIGHWAY	.....
COUNTY ROAD	.....



GENERAL HIGHWAY MAP CARLTON COUNTY MINNESOTA

PREPARED BY THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
TECHNICAL SERVICES DIVISION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

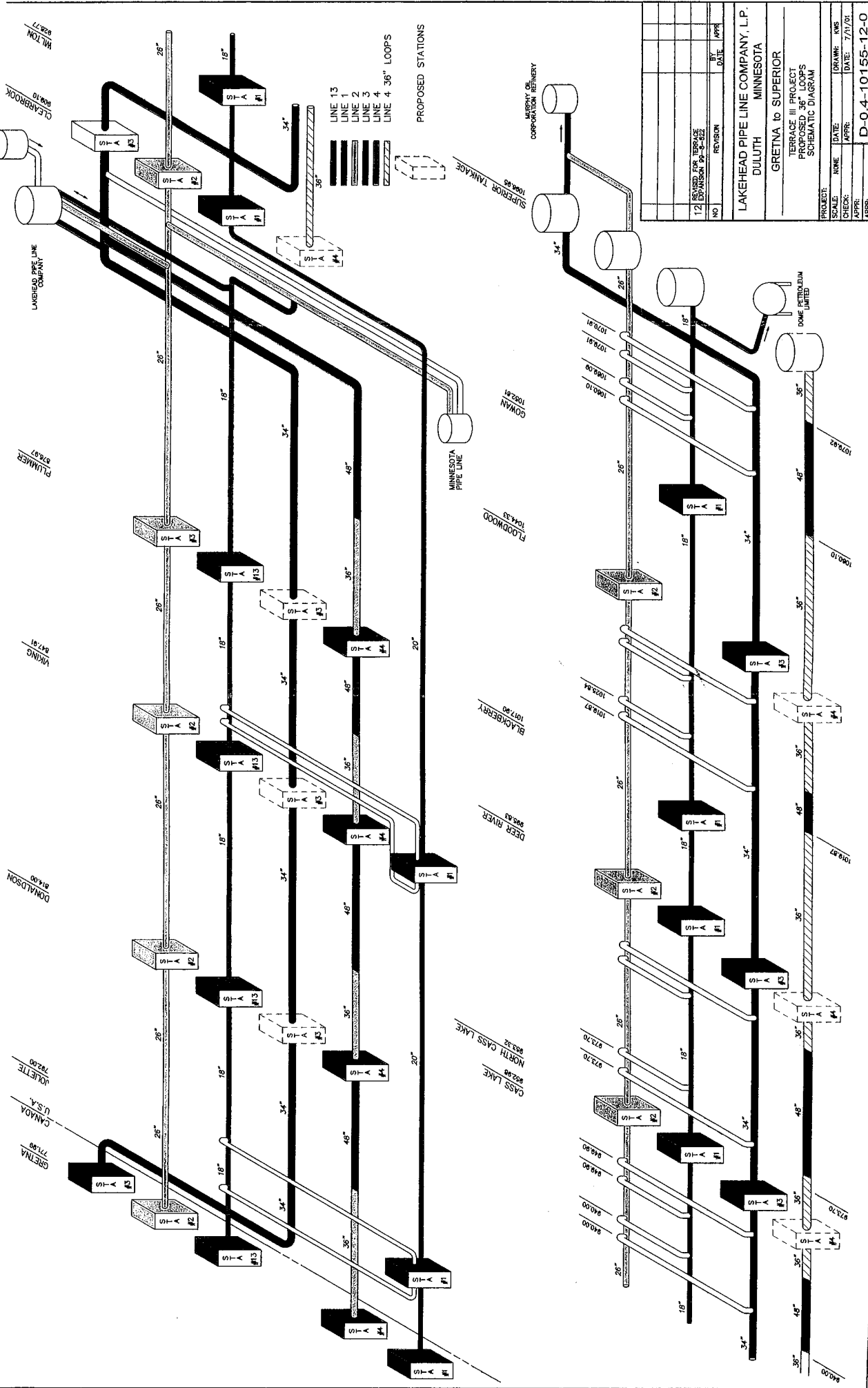
SCALE OF STATUTE MILES

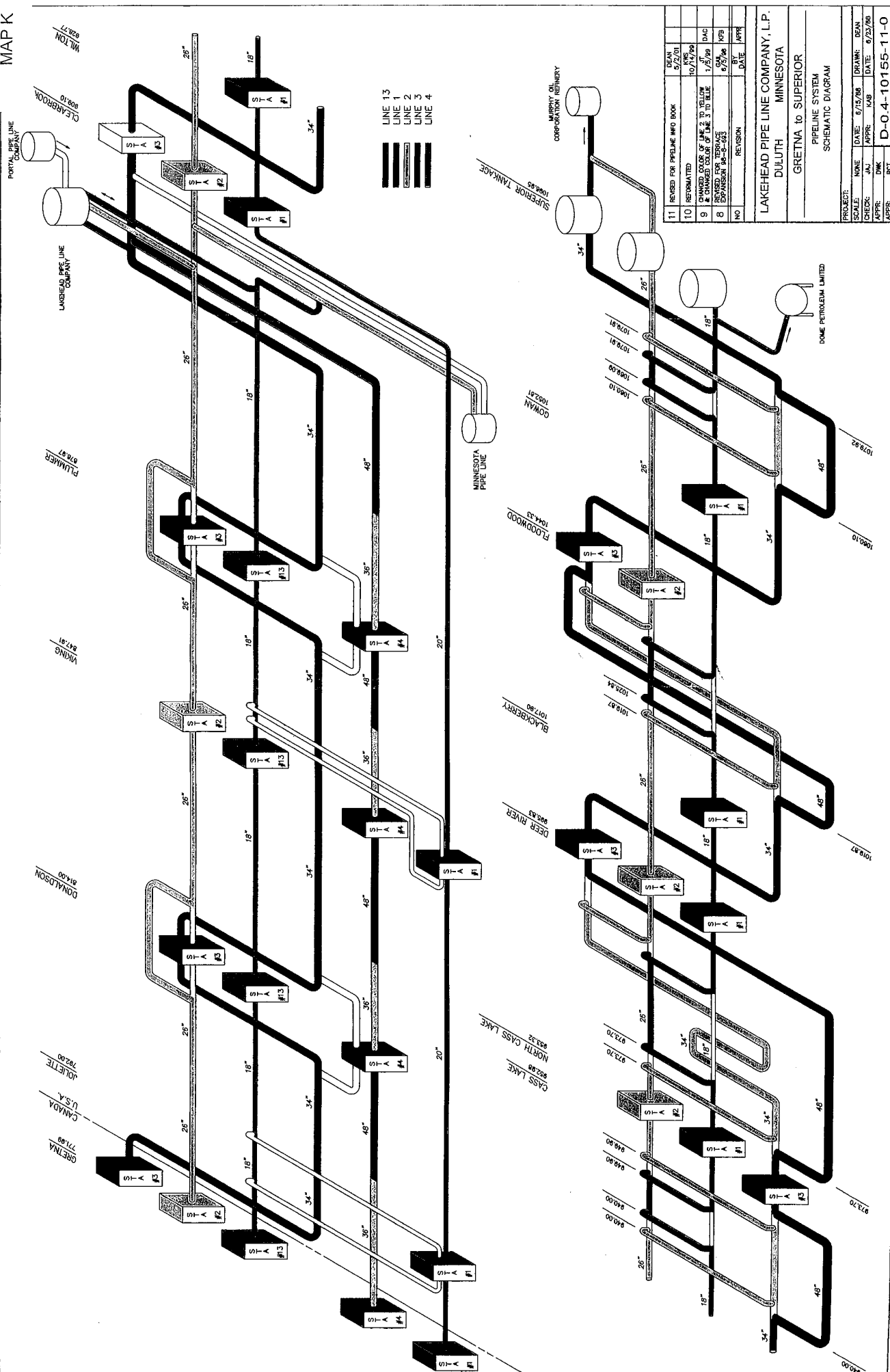


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Typical Stages of Pipeline Construction

ALL PHASES OF CONSTRUCTION UNDERGO INSPECTION



Lakehead engineers and managers plan the project.



An environmental review of the land's layout and other right-of-way characteristics is done.

Regulatory agencies conduct thorough reviews concerning the project. Lakehead also meets with landowners as needed to address questions.

Engineers design the pipeline with environmental protection safeguards.



Lakehead right-of-way agents contact landowners. Arrangements are made for site-specific needs.

Construction begins with marking, clearing and grading. Specialized and local construction workers are hired.



Topsail is separated and erosion control measures are put in place. Environmental and safety inspections begin.



Special crossing procedures are used to safeguard the environment.



Construction crews prepare the ditch with screened soil for the pipe.



Crews lay out the precast pipe sections.

Pipe is bent to fit the terrain or meet special needs.



Welders join the pipes together.

Safety and pipeline integrity procedures include X-ray inspection and weld certification.

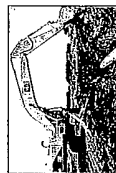
Pipeline joints are coated and inspected.



Workers lower pipe into specially prepared ditch.

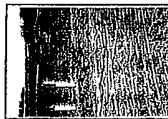


Then the ditch is backfilled and topsoil replaced.



The final phase of construction includes hydrostatic testing of the pipeline, pipeline inspection and start-up.

Land is reseeded, contoured and restored with landowner approval.



How did we do? Lakehead checks with landowners to discuss questions.



Lakehead Pipe Line
For more information,
please call (218) 725-0131